PLAIN PAPER FAX – LASER FAX L3 SERIES

OKIFAX 160

Service
Service
Service

Service Manual

Plain Paper Fax - Laser technology

A compact Copier, an integrated TEL-FAX machine combined with passive Fax Switch, document memory, automatic document and paper feeding, all in a Plain Paper Fax Machine, Caller ID and SMS (country and version depends)

Safety regulations require that the set be restored to its original condition
and that parts which are identical with those specified be used.

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OKI
PRINTING SOLUTIONS

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I Introduction

In this Chapter you can find

- Safety precaution
- List of features
- Feature description
- Operation elements

1 SAFETY PRECAUTIONS

1.1 IMPORTANT

- This Fax Model has been specified as a Class I Unit (grounded). The Telecom Line potential is isolated from the digital circuitry. To measure on the digital side, the measurement equipment should be connected to the same earth. For measurement on the Telecom side, measurement equipment should be ungrounded.
- Service technicians must be AWARE OF ESD and be GROUNDED! To avoid ESD risk you can order some ESD equipment in the parts list.
- After each disassembly of the apparatus the same safety tests as in the production line have to be performed (see chapter 15 “SAFETY-Test Specification”). This tests include four different steps to guarantee safety of the product according IEC / EN 60950-1:2001

Test procedure: a.) Earth-Continuity Test
b) Isolation Test
c) High Voltage Test: Primary/Mains – Secondary (USB)
d) High Voltage Test: Primary/Mains – Telephone line

WARNING!

Before opening the machine disconnect the Power Cable.
Never remove the isolation plate from the PGU
- HIGH VOLTAGE! -

1.2 ESD

1.2.1 General

ESD is a spark jumping from one conductive surface, charged with static electricity to another conductive surface. This incredibly fast movement of static discharge (the charge can jump to that conductor in a nanosecond) can have disastrous consequences, especially for electronic circuitry. We only feel ESD at a discharge of about 3.000 Volts. However many semiconductors can be damaged by a discharge of just 60 Volts or less. On non-conducting materials, such as plastics and textiles, charges remain stationary and cannot discharge and are therefore called static charges. Static charges are brought in by people and are generated during their normal activities.

1.2.2 Precautions to Prevent ESD Damage

Static electricity cannot be eliminated but it can be kept under control. Charging can be prevented by an appropriate grounding system for people and objects that may come into contact with the components or product.

TO PREVENT ESD KEEP THE FOLLOWING RULES:

1. All products being brought in for repair must be:
    - Processed in an ESD protected working area with a Grounded dissipative mat.
    - Kept in ESD protective packing material when not used.
2. Technicians should wear a wrist strap ground connected.

2 FEATURES

2.1 List of Features

Fax

- Laser printer on ordinary paper
- Modem: Super G3 33k6 Modem
- Fax memory: 400 pages
- Fax switch: Auto, Manual, Fax, EXT/TAM
- Polling function
- Automatic document feeder for 20 documents
- Broadcast function
- Time stamp
- Private branch exchange (PABX) possible
- Telephone book with up to 199 entries
- Ten groups

Telephone

- Private branch exchange (PABX) possible
- Telephone book with up to 199 entries
- Ten groups

Paper

- Paper cassette for up to 250 sheets
- Paper formats: A4 · letter · legal
- Ordinary typewriter and photocopier paper (60 to 90 g/m2)

Copier

- 64 grey tones
- Speed: 16 pages per minute
- Automatic document feeder for 20 documents
- Resolution: Fast · Quality · Photo
- Zoom: 25 to 400 percent
- Up to 99 copies from one document

Lists and Reports

- Functions list
- Journal (30 SMS, fax transmissions, telephone calls)
- Entries and groups in the telephone book
- Overview of the machine settings
- List of the pending transmissions
- Transmission report

SMS

- 640 characters *****
- Memory for 30 messages
- Automatic printing
- Notification *****
- SMS 2 Fax *****

***** (Depending on country and network)

Scanner

- Resolution: 256 grey tones
- Speed: Six seconds for one A4 page
- Automatic document feeder for 20 documents

2.2 Basic functions

HELP Function

When needed, your fax machine can print out lists containing the most important functions and settings of the machine. Press the key i on the Panel. Use ▲ or ▼ to select whether you would like to print out the help page 1: functions list or the help page 5: setup. Confirm with **OK**.

1 You can also print out the function list by pressing ▲ or ▼, choose function number 41 and press OK.
2 List of settings will be printed out by pressing MENU/OK, 44 and OK.

* To return to the previous menu step, by pressing **C** key.
* Move the cursor on the display with ▲ or ▼ keys
* Delete single numbers and letters with **C** or ←.
* To interrupt an operation in progress and return to the root menu without saving, press **STOP**.

Country setting

Use function 11 to select the specific country in which your fax machine will be used. It is essential to select the correct country otherwise your fax machine will not have the correct parameter settings for the local telephone network, CLIP and SMS function could doesn't work.

1 Press ▲ or ▼, 11 and **OK**.
2 Select the country by pressing ▲ or ▼ keys
3 Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

Set the Language

1 Press ▲ or ▼, 12 and **OK** to set the language on the display.
2 Select the desired language by pressing the arrows.
3 Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

Set Date and Time

1 To set the date and time on the display, press ▲ or ▼, 13 and **OK**.
2 Enter the date and time in the following manner: 08 08 05 14 00 for August 8th, 2005, 2:00 pm.
3 Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

Entering Your Telephone Number and Name

Your number and name, entered using function 14, will appear in the page header of every fax you send and as the sender identification of your SMS messages. In each case, up to 20 different characters are available to use.

1 Press ▲ or ▼, 14 and **OK**.
2 Enter your fax number with the number keys, for example, 00 44 123 45… To enter a plus sign, press @..... the Symbols Key. You may add a space by pressing the space key. Confirm your entry by pressing **OK**.
3 Enter your name using the letter keyboard. To enter capital letters, press Shift and the desired key simultaneously. The symbols are displayed directly above the letter keys. To enter symbols, press symbol key and choose corresponding symbol using ◄ or ►. It is not possible to insert a symbol as the first character of your name.
4 Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

Page Header

Your name and number appear in the page header of each fax transmission. If you do not wish to send out your information, you can turn off this function.

1 Press **MENU/OK**, 16 and **OK**.
2 Select TX HEADER with ▲ or ▼ and confirm with **OK**.
3 Select whether page header should appear on every fax transmission or not.
4 Confirm with **OK**. Pressing **C** will return you to the previous menu step; pressing **STOP** will return you to the root menu.

New Toner Cartridge

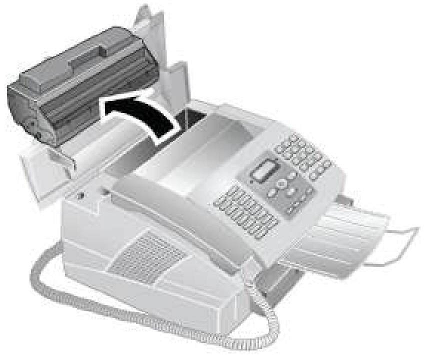
Before you can receive documents, make copies, or print, a toner cartridge must be inserted into the fax machine. Fore this reason, a starter cartridge is supplied with the machine (this cartridge has a capacity of approximately 600 pages). The toner level memory for this starter cartridge was set at the factory. The starter cartridge doesn't need to be updated with a Plug'n'Print card.
For each additional toner cartridge that you insert into your fax machine, you must update the toner level memory with the Plug'n'Print card provided.

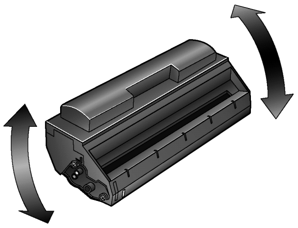
In order to guarantee a good print quality, use only original toner cartridges. Other toner cartridges can cause damage to the fax machine. Use of other toner cartridges also voids the guarantee.

1 Open the cover by taking hold of **both** document guides and tipping the cover backward.

2 Remove the old toner cartridge, by gripping it at the recess in the middle and pulling it upward.

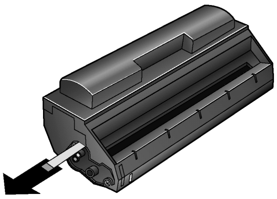
3 Take the new toner cartridge from the package.



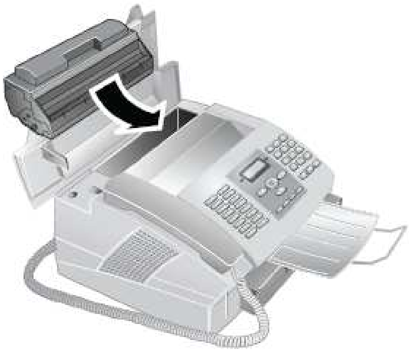


4 Shake the new toner cartridge back and forth several times in order to distribute the toner evenly, thereby improving the print quality.

5 Completely pull off the protection strip located on the left side of the cartridge.



Once you have removed the protection strip, do not shake the toner cartridge any more. Otherwise, it is possible that toner dust will be released into the air.

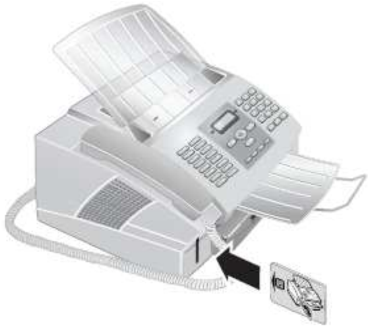


6 Place the toner cartridge into your laser fax machine.
The cartridge should snap securely into position.

7 Close the cover. Make sure that the cover snaps securely into position on both sides.

8 NEW CARTRIDGE? appears on the display. Confirm with **OK**.

9 Wait until INSERT CARD appears on the display. Push the Plug’n’Print card of the new toner cartridge into the opening on the left side next to the paper tray, with the contacts facing to the left. (Only the Initial cartridge can be used for the first time without inserting a Plug’n’Print card.)



> Should the error message “Cannot read card” appear on the display, you may have inserted the Plug’n’Print card incorrectly. The contacts must face to the left as you insert the card into the machine.

10 It may take a moment to update the cartridge. When the process is completed, the following appears on the display: ACTION COMPLETED / REMOVE CARD

11 Pull the Plug’n’Print card out of the fax machine. You can interrupt the recharging process at any time by simply pressing **STOP**. However, the toner level memory must be updated for each new toner cartridge. If you have pressed the **STOP** key by mistake, you can restart the recharging process as follows:

1 Press ▲ or ▼, choose function 62 and **OK**
2 Select new black with the arrows, and confirm with **OK**. Select yes with arrows and confirm again. After a short time, the fax machine will ask you to insert the Plug’n’Print card.

> If the toner level of your cartridge is low, then every time you open and close the cover, the following question will appear on the display: black=new? If you have not installed a new cartridge, press **STOP**. If you have installed a new cartridge, press **OK** and follow the description set forth above.

2.3 Basic operations

2.3.1 Communication

PAGE HEADER

TTI and page numbers are printed on each fax that is transmitted. It is possible to turn off the page header.

TRANSMIT TERMINAL IDENTIFICATION (TTI)

Identifies the user's fax unit by including the name and fax number that has been programmed into the fax unit on the top of every page. This allows the receiving parties to easily identify the source of all documents being sent to them. FCC regulations also require that transmitted documents identify the sender's name, phone number, transmission date and time.

TSI / CSI

TSI: Identification (Tel. Nr.) of the transmitting machine
CSI: Identification (Tel. Nr.) of the receiving machine

COMPRESSION METHODS

Modified Hoffman: method to reduce the data transferred via the telephone line. All G3 machines offer M.H. – coding.
Modified read: efficient coding system that increases speed by about 15%. M.R. is not available in some G3 machines.

AUTOMATIC BACKGROUND CONTROL

The background control (=intensity difference between the text and the background) is adjusted automatically.

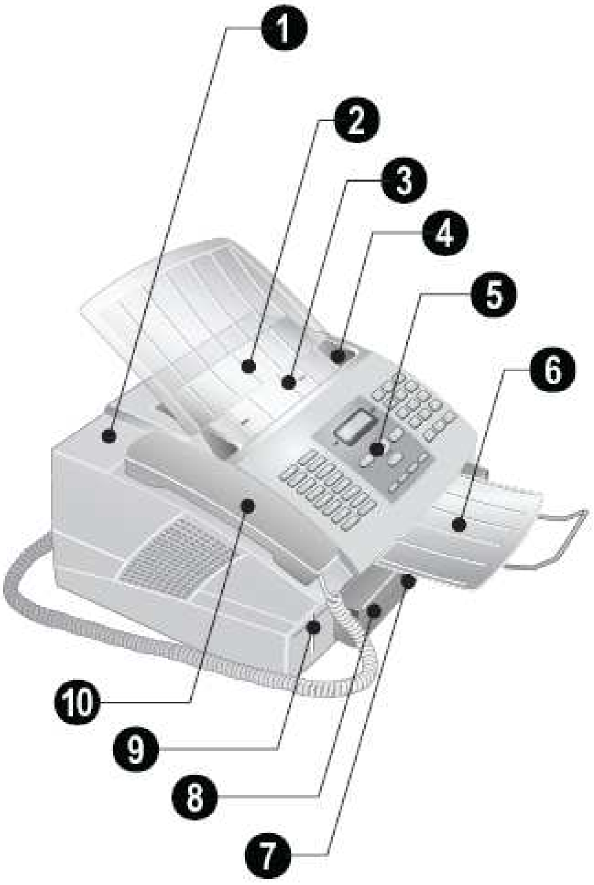
TIME DATE STAMP

The fax machine will automatically record the date and time of every recorded message. If you play back a message, you will see data on display.

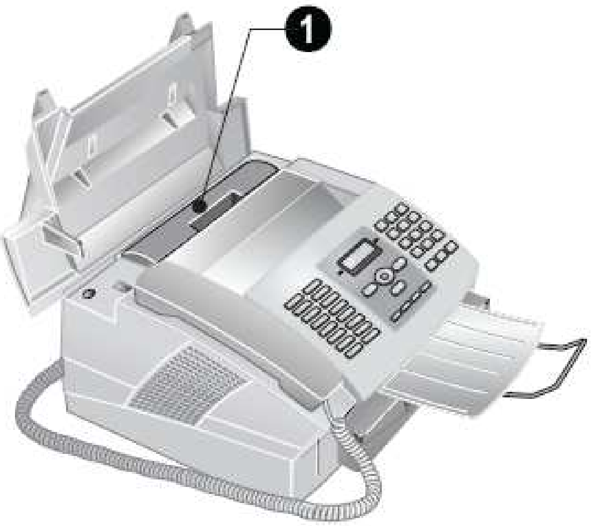
3 OPERATION ELEMENTS

3.1 Device Overview

❶ Cover
❷ Document support
❸ Document feed slot
❹ Document guide
❺ Panel with display
❻ Document outlet
❼ Printout and fax outlet (extendable)
❽ Paper tray
❾ Slot for the Plug'n'Print card
❿ Telephone handset with spiral cable



❶ Toner cartridge



Connections on the Rear Side

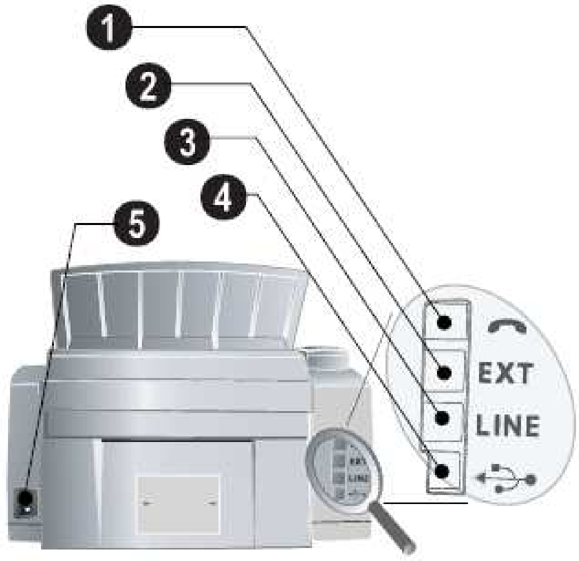
❶ ☎-Socket—Connection socket for the telephone handset

❷ **EXT**-Socket—Connection socket for additional devices

❸ **LINE**-Socket—Connection socket for telephone cable

❹ ↔-socket—USB port for PC

❺ Mains cable socket



3.2 Control Panel and Display

Keys (**A—Z**)—Telephone book register: Calling up telephone book entries / entering letters. Entering capital letters by pressing and holding ⇧ button. Entering a space using ␣. Entering a full stop using •. Entering a break using **R**🅿.

@...—Entering special characters (punctuation marks and symbols). Select the entries with ▲/▼. Confirm with **OK**.

å...—Entering language specific special characters (special letters). Select the entries with ▲/▼. Confirm with **OK**.

⇧—Shift key: entering capital letters / in combination with other keys: calling additional functions

A-Z 📖—Calls up telephone book functions

Red lamp ⚠—If the lamp flashes, please read what is indicated on the display

Green Lamp 🗎/✉—It flashes whenever an SMS message has arrived or when a document is waiting to be retrieved from the fax memory.

⊗—Function abort / return to the starting mode / documents eject

C—Returning to the previous menu level / deleting individual digits

▲/▼—Calling the menu functions / navigation within the menu / selecting options / moving the cursor

OK – Calling the menu functions/ confirming input

◇—Start a fax transmission or fax reception

COPY—Press twice: making copies automatically. Press once: adjusting copies

i—Print list of functions, jobs, settings / printing fax journal or telephone book / Sudoku: printing a game / printing the fax templates

✉—Calling up the SMS menu (function is not supported in all countries and networks) / in countries and networks without SMS function: calling up Text2Fax sending

✱—Sending to multiple recipients (= Broadcasting): Sending fax or SMS message to multiple recipients

⁞F 🖼—Setting higher resolution for faxes and copying (**NORMAL**, 🗎—**FINE**, ⁞F—**SFINE**, 🖼—**PHOTO**)

Numeric keys—Entering digits

○● ◧—List of the last ten numbers dialled (= redialling list)

⇧ and ○● ◧—List of last ten callers (= caller list)

☎—(LPF 920): Listening while the connection is established / (LPF 925, LPF 935): Dialling with the handset replaced

R🅿—Insert short line interruption (Hook Flash) as office index on PABX or for calling special functions in the public telephone network (PSTN)

⇧ and **R**🅿—Inserting dialling pause

Symbols on the LCD Display

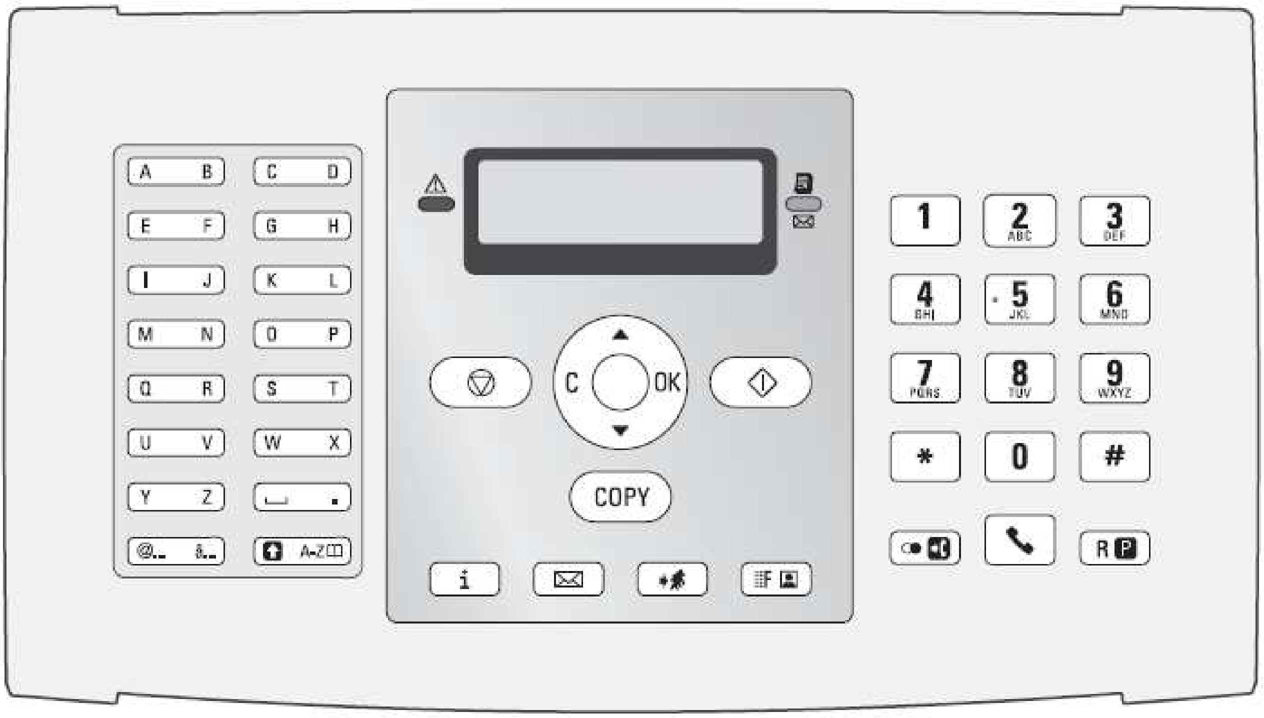
⁞F—**SFINE** resolution configured

🖼—**PHOTO** resolution configured

🗎—**FINE** resolution configured

✱—Incoming calls during absence (function is not supported in all countries and networks)

✉—Incoming SMS messages (function is not supported in all countries and networks)



II Function

In this Chapter you can find

- Type of List
- Service mode
- Maintenance Function
- Description of service functions

4 TYPE OF LIST

4.1 Function list

To print the function list press ▲ or ▼ Key, choose function 41 and confirm with OK, the function list is a summary of all user functions includes additional current settings.

Example of the list:

** FUNCTION LIST **

INSTALLATION

11	COUNTRY	Choice of Country
12	LANGUAGE	Choice of Language
13	DATE/TIME	Date / Time setting
14	NUMBER/NAME	Enter your name and your number
15	LINE TYPE	
16	TECHNICALS	Technical parameter
17	RING COUNT	
18	RINGER VOLUME	
19	FAX MODE	

FAX

21	TX SPEED	Reduce transmission speed
22	POLLING RX	Polling (receiving) a document
23	POLLING TX	Document to be polled (sending)
24	SEND LATER	Single or Broadcast in a certain time
25	SEND REPORT	Printing type of Send Report
27	FAX ANSW.	Received fax printing Authorisation
28	RECEPTION	Setting Nr. of fax Copies and sorting
29	FAXTEMPLATES	

SMS SERVICE (Country depends)

31	SEND SMS	Send a SMS
32	READ SMS	Access received SMS messages
33	DELETE SMS	Erase SMS (selected, new, all)
34	PRINT SMS	Print SMS (selected, new, all)
35	PARAMETERS	SMS settings
36	SMS CENTERS	Server configuration

PRINT

41	FUNCTIONS LIST	Function list printing
42	LOGS	Print TX and RX logs
43	DIRECTORY	Print the directories
44	SETUP	User parameters printing
45	COMMANDS	Printing of commands list

COMMANDS

51	PERFORM	Perform a command
52	MODIFY	Update of commands
53	CANCEL	Delete a command
54	PRINT	Printing of a document in wait queue
55	PRINT LIST	Printing of the commands list

OTHERS

61	LOCK	Activate a lock code to limit access
62	PRINT. CARTR.	Set new cartridge and toner status
63	SAVE/LOAD	Save/load directory on microcard
66	COUNTERS	
68	SUDOKU	

Keys:

Redial	: Redial the last 10 numbers dialled
Blue key + redial	: Caller list
R/Pause	: Special functions (Call waiting, toggling)
Blue key + R/Pause	: Insert dialling pause
Handset key	: On hook dialling
Blue key + handset key	: Broadcast sending
i key	: Print out function list, setting list

FW-Info: L3 V1.09 Nov 08 2007 16:29:19

4.2 Parameter list

The current settings on your machine can be seen on your list of parameters.
Press ▼ or ▲, 44 and OK button to obtain this list.

Example of the list:

** LIST OF PARAMETERS **

SID: Service Number: 1234567 Date: 16-08-07 16:34

11	COUNTRY	Oesterreich
12	LANGUAGE	English
13	DATE / TIME	16-08-2007 16:34

TEL. NETWORK

151	NETWORK TYPE	PABX

SEND REPORT

25	SEND REPORT	WITH

RECEPTION

25	NBR OF COPIES	1
28	SORTED PRINT	WITH

CART CAPACITY

622	BLACK	53%

RECEPTION

661	PRINTED PG	889
662	SENT PAGES	405
663	RECEIVED PG	276

4.3 List of Logs

A list of all **TRANSMITTED** and **RECIEVED** faxes. If an error occurs during the transmission you will be informed by the error report which is printed out. This list is accessed by pressing MENU 42 and then the OK button.

Example of the list:

** LOGS **

SID: Service Number: 1234567 Date: 16-08-07 16:34

TRANSMISSION

Date/Time	Subscriber	Mode	Pages	Durat.	Status	Note
12-08 8:19	06763006777	NORMAL	1	0’27”	Correct	
12-08 14:35	06641648901	NORMAL	1	0’17”	Correct	
12-08 14:44	06763006777	NORMAL	1	0’26”	Correct	
12-08 14:49	06763006777	NORMAL	1	0’27”	Correct	

RECEPTION

Date/Time	Subscriber	Mode	Pages	Durat.	Status	Note
12-08 17:18			0	0’04”	Code 03	User break
12-08 17:20	+43 1 60101 4875	Normal	1	0’34”	Correct	
12-08 17:40			0	0’06”	Code 03	User break
19-08 13:54			0	0’06”	Code 03	User break

4.4 Directory list

This list provides a list of the numbers stored in your machine. This list is accessed by pressing MENU 43 and then the OK button.

Example of the list:

**** DIRECTORY ****

SID: Service Number: 1234567 Date: 14-12-07 16:34

Name	Number -/ Group	Directory
Arnold	06641234567	0
Customers	G_2	5
John	06647654321	1
Mike	00431661554567	2
Sagem	G_1	4
Sandra	06763006777	3

**** GROUP ****

SID: Service Number: 1234567 Date: 14-12-07 16:34

Group	Content
G_1	0 3
G_2	1 2

5 SERVICE FUNCTIONS

The fax is equipped with a set of logic blocks referred to as SOS (SOFT Switch) Nr.1 to 30. Each block consists of 8 bits called bit 1 to 8. Each bit can take a value of either 0 or 1. On the display, a block (from bit 1 to 8) is read from right to left. When a configuration is first selected, the blinking cursor is always placed on bit 8 (the bit at the left)

When the display shows the date and time, you can access the configuration bytes by means of the key sequence:

Menu * #

The description of these parameters can be found below. They are modified in the same manner as all others parameters.

SOFT-Switch 1: Ringing and Automatic Printing

Bit	8	7	6	5	4	3	2	1
Use	SOS-IMPTRA: Trace printing/ PC download enable	SOS-IMPT30: Automatic Printing of T30 trace after comm. error	SOS-IMPAUTO: Automatic log printing	Reserved	Reserved	Reserved	Reserved	Reserved
Values	0: no 1: yes	0: no 1: yes	0: no 1: yes					

SOFT-Switch 2: Scanner / Printer Configuration

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	Reserved	SOS-BEEP: Keyboard beep on/off but not STOP key	Reserved	Reserved
Values						0: beep on 1: no beep		

SOFT-Switch 3: Line Configuration

Bit	8	7	6	5	4	3	2	1
Use	SOS-ECHO: Echo cancelling	SOS-EPTV29: Use Echo Protect Tone with V29	Reserved	SOS SEUILREC: Reception threshold	SOS-NIVEMI: Transmission level			
Values	0: no 1: yes	0: no 1: yes		0: -43 dBm 1: -47 dBm	00 = 0 dBm 01 = -1dBm ..... 06 = -6 dBm ..... 0F = -15dBm			

SOFT-Switch 4: Fax Protocol Configuration

Bit	8	7	6	5	4	3	2	1
Use	SOS-ECM: Restricted ECM	SOS-LGINF: Maximum length of scan, printing, communication	SOS-DISINF: Unlimited DIS length	SOS-RTN: Page accept criterion		SOS-TCF: TCF accept criterion	SOS-DISCOURT: Restricted DIS size	SOS-MODPRIV: Communicat. In private mode
Values	0: no 1: yes	0: 1 meter 1: 3 meter	0: no 1: yes	0: 10% max 1: 15% max 2: 20% max 3: no check		0: normal 1: special	0: long DIS 1: short DIS	0: no 1: yes

SOFT-Switch 5: Loudspeaker Configuration

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	SOS-HP: Line monitoring during fax comm.	Reserved	Reserved	Reserved	Reserved
Values				0: no 1: yes				

SOFT-Switch 6: Line Tests

Bit	8	7	6	5	4	3	2	1
Use	SOS-TSTDCOM: Driver test functions	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Values	0: no 1: yes							

SOFT-Switch 7, 8: Reserved

SOFT-Switch 9: Approval + Communication Applications

Bit	8	7	6	5	4	3	2	1
Use	Reserved	SOS-LIGNE5S: Lines of 5sec. During reception	Reserved	SOS-NOTREMIS: Printing of first page on transmission report	Reserved	Reserved	Reserved	Reserved
Values		.0: Length of lines not limited to 5sec./lines 1: Maximum length of a line 5sec.		0: no 1: yes				

SOFT-Switch 10: Communications (Locks / Miscellaneous)

Bit	8	7	6	5	4	3	2	1
Use	Reserved	SOS-SONREA: Access to redialling parameters	Reserved	Reserved	Reserved	Reserved	SOS-BTYPNUM: Access to impulse / DTMF dialling parameter	SOS-AFFVIT: Comm. Rate display
Values		0: no access 1: access					0: yes 1: no	O: no (the page number is displayed) 1: yes (the comm. Rate is displayed

SOFT-Switch 11,12: Reserved

SOFT-Switch 13,14,15,16: Internet Functions (Not Used)

SOFT-Switch 17: Communication

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	SOS-NO-TRT-FCERROR: retry after modem high data dedect. Problem	Reserved	Reserved	Reserved	Reserved
Values				0: yes 1: no				

SOFT-Switch 18: Coding / Communication Rate

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	SOS-CODCOM: COM negotiated encoding type		SPS-CODMEM: Stored document encoding type	
Values					01: MH encoding 10: MR encoding 11: MMR encod.		00: RL encoding 01: MH encoding 10: MR encoding 11: MMR encod.	

SOFT-Switch 19: Miscellaneous Software Function

Bit	8	7	6	5	4	3	2	1
Use	Reserved	SOS-ONETOUCH: Enable <one touch> functions	SOS-MENUCLAVIER: Hide keyboard menus and force QWERTY keyboard	SOS-REIMP: Reprinting of received documents	SOS-REGULREC: T30 reception control inhibited	Reserved	Reserved	Reserved
Values		0: no 1: yes	0: no 1: yes	0: no 1: yes	0: no 1: yes			

SOFT-Switch 20: Reserved

SOFT-Switch 21: T4-T6 Decoder / Debug

Bit	8	7	6	5	4	3	2	1
Use	Reserved	SOS-DETECT OCCUP: Inhibition of engaged tone detect	Reserved	SOS-GARCAGE-FLASH: flash memory garbage collection method	Reserved	Reserved	Reserved	SOS-TRAITLIGERR: T4 decoding line copying mode
Values		0: no 1: yes		0: garbage collection when application terminates 1: garbage collection as background task ATTENTION: taken into account only after reboot of CPU				0: for each line with an error 1: only once, then destroy

SOFT-Switch 22: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	SOS-DUREE-2100 V34: Transmission time of the 2100 modified for V34 reception	Reserved
Values							00: 5sec. 01: 4,5sec. 10: 4sec. 11: 3,5sec.	

SOFT-Switch 23: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	SOS-SORTSEND: Sorted sending via ADF	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Values	0: no 1: yes							

SOFT-Switch 24: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	SOS-SMSV23: SMS function type	SOS-SMSRECV23: Reception SMS function	Reserved	Reserved	Reserved	SMS-PROTOCOLE: Used protocol for SMS	Reserved	Reserved
Values	0: SMS via V23 1: Text2Fax	0: no 1: yes				0: country dep. 1: opposite		

SOFT-Switch 25: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	SOS-DBL_ALT: Photocoupler Type for ring detection	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
Values	0: single alternance 1: double alternance							

SOFT-Switch 26: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Activation of Carrier loss in ECM mode for DTS label	Activation of fax modification for DTS label	Menu page counter present / not present	SMS service center number menus present / not present	Reserved	Reserved	Reserved	Reserved
Values	0: not active 1: active	0: not active 1: active	0: not present 1: present	0: present 1: not present				

SOFT-Switch 27: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Chip select restore (ESD problems)	Reserved	Reserved	Reserved	Reserved	Number of busy tones	CLIP time update delta	Time update via CLIP
Values	0: no 1: yes					O: 3 busy tones 1: 2 busy tones	0: always 1: < 90min.	0: yes 1: no

SOFT-Switch 28: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Chip card clock selection	
Values							00: 1 MHz 01: 1,277 MHz 10: 1,7 MHz 11: unused (1MHz)	

SOFT-Switch 29: Miscellaneous Software Functions

Bit	8	7	6	5	4	3	2	1
Use	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	User function paper format	User function contrast
Values							0: disabled 1: enable	0: disabled 1: enable

SOFT-Switch 30: Reserved

6 MAINTENANCE FUNCTIONS

In order to use the maintenance functions, the SOS_IMPTRA switch (SOS1-Bit8) has to be set to 1

6.1 Initialization Functions

ITEM	ACTION
Menu # 0	Default user parameters configuration (factory status) → Restart with Easy Install Directory is preserved Pages counters are preserved Consumables counters are preserved Communication log is preserved
Menu # 1	Clear directory
Menu # 2	Clear communication log
Menu # 3	Clear pages counters (If page counter SOS26 / 6 is switched ON)
Menu # 4	Clear consumables counters (**Attention:** after clear, Chip Card is needed)
Menu # 5	Complete “hardware” reset : functions 0 + 1 + 2 + 3 + 8 → Restart with Easy Install. This command sequence is taken into account only if printer cover is open
Menu # 6	Same as Menu # 7 but without Easy Install
Menu # 7	Functions 0 + 2 + 8 → Restart with Easy Install Directory is preserved Pages counters are preserved Consumables counters are preserved
Menu # 8	Clear document memory (received documents, documents to be sent) Clear Sending command list Clear Printing command list Directory is preserved Pages counters are preserved Consumables counters are preserved Communication log is preserved User parameters are preserved
Menu # 9	Same as Menu # 7

6.2 Other Functions

ITEM	ACTION
*	Internal system status printing (identification + T30 protocol traces + modem traces)
Menu * 1	Parameters printing (user parameters + technical parameters)
Menu * 2	Clear communication logs
Menu * 3	Not used
Menu * 4	Wait for firmware download via USB
Menu * 5	Save users parameters and directory on I2C chip card
Menu * 6	Not used
Menu * 7	Not used
Menu * 8	Not used
Menu * 9	Restore users parameters and directory from I2C chip card
Menu * E Menu * e	Display internal firmware status (applications and drivers)
Menu * M Menu * m	Display modem chip type
Menu * R Menu * r	Software reset
Menu * V Menu * v	Display firmware version and checksum on LCD
Menu * W Menu * w	White Reference
Menu * Y Menu * y	- If consumer counter value is higher than near end (6%), set counter value to 6%. - If consumer counter value is lower than near end (6%), set counter value to 1%
Menu * I Menu * i	Entry of Customization code (to set the correct customization to a new mainboard

7 TEST FUNCTION

7.1 Purpose

The test mode is a software interface that listen for test commands received on Fax Keypad. The machine interprets these codes and initialize the corresponding action.

7.2 Enter Test Mode

First you have to set the Fax machine in the maintenance mode.
(SOS1-Bit8 has to be stetted to one)
To enter in the Test Mode press the Key combination below on the keypad:

Menu # * 0

You will enter into the Test Mode and the following messages will appear on the displays:

				T	E	S	T	M	O	D	E				

ATTENTION: After you have entered in the Test Mode the first Test you have to carry out, is the Test 100 Param. 00 (INIT Test Mode).

7.3 Display

The content of the display has following format:

Y	Y	Y		T	E	S	T	M	O	D	E			X	X

YYY ... Shows Running Test or last test
XX ... Shows Result of last test

7.4 Keys used on Fax Keypad in Test Mode

- **START** Test Ok or Test start
- **STOP** Test failed or Test aboard
- **KEY 0-9, * ,#** Input Test number

7.5 Aboard Test

For all Tests is the possibility with the STOP key for to aboard the test foreseen.

7.6 General Description of a Test-Step

All test flows are described in the form outlined. The field *Step* is for orientation in case of Jumps, *Status* is for decisions, *Operator* describes the actions of the Operator, *UUT* describes the actions for the Fax machine, *Display* shows the Text during a Test, and *Remarks* is for added Information.

Step	Status	Operator	UUT	Display	Remarks
1	OK		Wait	XXXXXXXX XXXXXXXX	
2	NOK	Do			Info
3	Repeat		Do		
4					

A short Test-description and Pass-criteria is also included in a Test-step.

7.7 Short Overview of Tests for Service

Test number	Test name	Parameter	Remark
100	INIT Test mode	YES	Save Consumer counter
103	Cradle	No	
108	Speaker	No	
109	Keys	No	
110	LCD/Icons	No	
111	LED	No	
112	Sensors	No	
120	Fan Test	No	
136	End Test mode	No	End test, restore Consumer counter, delete doc’s, start USERMODE

7.8 Description of Test for Service

7.8.1 INIT Testmode (Test-Code 100)

This function is for initializing the TEST MODE if the Fax machine was in USERMODE.
Input Code **100** and then the parameter **00**.

Flow:

Step	Status	Operator	UUT	Display	Remarks
1			Is in TEST MODE	TESTMODE	
2		Enter Command			Keypad: 100
3			Receive Command, clears all buffers, initialized all relevant drivers and variables, set all test to FF (means tests not done)	ENTER TEST 100	
		Enter Parameter			Keypad: 00
4	OK		Set Resultbyte to 00	100 TESTMODE 00	
5	NOK		Set Resultbyte to XX	100 TESTMODE XX	XX…Errorcode

Pass:
No errors occurred during Init Testmode

Resultbyte:
00 … Test done and OK
FF … Test not done
80 … Operator pressed <STOP>
XX … Error code

Remark:
Initialize Toner counter to 20% for making printing tests.

7.8.2 Speaker (Test-Code 108)

For test the right connection of speaker or buzzer, the UUT sends a tone. This tone works with the highest volume.

Flow:

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and waits for command	YYY TESTMODE XX	YYY…last Testcode XX…Errorcode or 00
2		Enter command			Keypad: 108
3			UUT waits for <START>	SPK TST	
4		Press <START>	UUT plays a tone		
5		Check the tone			
6	OK	Press <START>	Set Resultbyte to 00	108 TESTMODE XX	XX = 00 and no anomaly occurred
7	NOK	Press <STOP>	Set Resultbyte to XX	108 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:
The sounds are clear to hear and the operator pressed <START>.

Resultbyte:
00 … Test done and OK
FF …Test not done
80 … Operator pressed <STOP>

7.8.3 Keys (Test-Code 109)

The examining staff presses all buttons in the order defined below. The button to be pressed as next is shown at the display. Exactly the button which is shown at the display may always only be pressed. Another button is pressed this keystroke is ignored (exception: the standard button for bad serves for the demolition of the sequence). Was a keystroke is accepted as long as maintained till the button is let off again. If several buttons are pressed at the same time, the code of the first button is always read. This has the consequence that the second button is never evaluated as pushed. The examining staff is asked to enter the result of the button test over the display at the end of the sequence. According to the result the examining staff presses the standard buttons for OK/NOK.

Flow*:*

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMODE XX	YYY…last Testcode XX…Errorcode or 00
2		Enter Command			Keypad: 109
3			UUT shows the Key for checking and wait for pressing	OPU KEY: xxx	xxx... next Key to be pressed
4		Press shown Key	Shows and wait for the next key - Go to Step 3 or next step if a error occurred or the last key was shown		
5		Press <START>	Set Resultbyte to XX	109 TESTMODE XX	XX = 00 and no anomaly occurred XX <> 00 or anomaly occurred

Pass:

All Keys possible to press, no anomalies occurred

Resultbytes:

00	Test ok
FF	Test not done

All other bit combinations means error (anomaly occurred).

Key Sequence:

<A-Z>, <i>, <<->, <OK>, <->>, <Fax Mode>

<q>, <w>, <e>, <r>, <t>, <y>, <u>, <i>, <o>, <p>, <←>
<a>, <s>, <d>, <f>, <g>, <h>, <j>, <k>, <l>, <.>, <Enter>
SHIFT+<Z>, <x>, <c>, <v>, <b>, <n>, <m>, < >,CTRL+<@>

<SMS>, <Redial>, <R>, <Dial>

<1>, <2>, <3>, <4>, <5>, <6>, <7>, <8>, <9>, <*>, <0>, <#>

<Res.>, <Copy>, <Clear>, <Stop>, <Start>

7.8.4 LCD / Icons (Test-Code 110)

The assessment of the LCD is visually made by the operator. According to the assessment the examining staff presses the standard buttons after every test step for good/bad. The input is possible only after a time of 0.5 .The cursor is turned off at all tests.

Black Dots

I.e. on all portrayable signs it is written to 0 xFF all points are steered for with the exception of the icons.

Blank display

I.e. on all portrayable signs it is written to 0 x20 all points are turned off.

CG RAM/icons

The LCD is represented a sign with a matrix of 5 columns and 7 lines. 8 signs can be generated in the CG RAM.

Describing CG RAM

The signs must be generated in the CG RAM first:

- 1st sign (1): only the 5 points of the undermost line (7th lines) are steered for,
- 2nd sign (2): only the points of the 6th line are steered for,
- 3rd sign (3): only the points of the 5th line are steered for,
- 4th sign (4): only the points of the 4th line are steered for,
- 5th sign (5): only the points of the 3rd line are steered for,
- 6th sign (6): only the points of the 2nd line are steered for,
- 7th sign (7): only the points of the 1st line are steered for,
- 8th sign (8): only the points of the 7th line are steered for.

Distributing CG RAM

The signs become the distributed CG RAM in the following order at the display:

- The line 1 LCD: Signs 1, 2, 3, 4, 5 6 7 7 7 7 6 5 4 3 2 1,
- Line 2: 7, 6, 5, 4, 3, 2, 1, 8, 1, 8, 2, 3, 4, 5, 6, 7 .

Icons

All icons with the exception of the 5th icon (filling level advertisement ink cartridge) are steered for. For the time being only the frame is represented at the 6th icon (ink point marking film advertisement) (0 x5F). You a point of the icon then represent at the 6th icon in addition to the frame cyclically exactly the waiting time between every change is 0.3 s. From this the cycle gives up for the 6th icon: 0 x5F, 0 x2E, 0 x79, 0 x42.

Sign

(0 x48) are written to, X, on all portrayable signs.

Controller check

(0 x8A) are written to, o, on all portrayable signs.

Flow:

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMODE XX	YYY…last Testcode XX…Errorcode or 00
2		Enter Command			Keypad: 110
3			Wait for <START>	LCD TST	
4		Press <START>			
5			Show Black Dots and wait for input		
6	OK	Press <START>			
7	NOK	Press <STOP>			
8			Show blank display and wait for input		
9	OK	Press <START>			
10	NOK	Press <STOP>			
11			Write Chars in CG-RAM		
12			Show chars from CG-RAM and wait for input		
13	OK	Press <START>			
14	NOK	Press <STOP>			
15			Show icons and wait for input		
16	OK	Press <START>			
17	NOK	Press <STOP>			
18			Show all X and wait for input	XXXXXXXXXXXX	
19	OK	Press <START>			
21	NOK	Press <STOP>			
22			Show all o and wait for input	oooooooooooooooo	
23	OK	Press <START>		110 TESTMODE XX	XX = 00 and no anomaly occurred
24	NOK	Press <STOP>		110 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:

All Tests ok, no anomaly occurred.

Resultbytes:

00	Test ok
FF	Test not done

All other bit combinations means error (anomaly occurred).

7.8.5 LED (Test-Code 111)

The LED's are switched on and off in cycles of 0,5sec.
The assessment of the LED is visually made by the examining staff. According to the assessment the examining staff presses the standard buttons for OK/NOK. The input is possible only after a time of 0.5 sec.

Flow:

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMODE XX	YYY…last Testcode XX…Errorcode or 00
2		Enter Command			Keypad: 111
3			Set/clear LED after each other	LED TEST	
4	OK	Press <START>	Set Resultbyte to 00	111 TESTMODE XX	XX = 00 and no anomaly occurred
5	NOK	Press <STOP>	Set Resultbyte to XX	111 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:
All Tests ok, no anomaly occurred.

Resultbytes:

00 ... Test ok
FF ... Test not done
80 … Operator pressed <STOP>

7.8.6 Sensors (Test-Code 112)

Checks the Cover Sensor and the Paper-Cassette sensor.

Flow:

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMOD XX	YYY…last Testcode XX…Errorcode or 00
2		Enter Command			Keypad: 112
3				SEN TST	
4			Checks Paper Cassette sensor	REMOVE PAP CASS	
		Remove Paper Cassette		INSERT PAP CASS	
5		Insert Paper Cassette	Checks Paper Cassette sensor	OPEN PRT COVER	
6		Open Printer Cover	Checks Cover sensor	CLOSE PRT COVER	
7		Close Printer Cover	Checks Cover sensor	WAIT PRT READY	
9	OK		Set Resultbyte to 00	112 TESTMODE XX	XX = 00 and no anomaly occurred
10	NOK		Set Resultbyte to XX	112 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:

Resultbytes:

00 ... Test ok
FF ... Test not done
All other bit combinations means error (anomaly occurred).

7.8.7 Fan (Test-Code 120)

Checks the function of the fan

Flow:

Step	Status	Operator	UUT	Display	Remarks
1			Is in Testmode and wait for command	YYY TESTMODE XX	YYY…last Testcode XX…Errorcode or 00
2		Enter Command			Keypad: 120
4		Open and close printer cover	Switch fan on and wait for input	FAN TST	
5		Check function of fan by hand			.
7	OK	Press <START>	Set Resultbyte to 00	120 TESTMODE 00	XX = 00 and no anomaly occurred
8	NOK	Press <STOP>	Set Resultbyte to XX	120 TESTMODE XX	XX <> 00 or anomaly occurred

Pass:

All Tests ok, no anomaly occurred

Resultbytes:

00	Test ok
FF	Test not done

80 … Operator pressed <STOP>

7.8.8 EXIT Testmode (Test-Code 136)

This function exit‘s the TEST MODE if the Fax machine is in TESTMODE. After exit the Fax machine is in USERMODE.

Flow:

Step	Status	Operator	UUT	Display	Remarks
1			Is in TESTMODE	YYY TESTMODE XX	YYY…last Testcode XX…Errorcode or 00
2		Enter Command			Keypad_ 136
3			Receive Command, clears all buffers, initialized all relevant drivers and variables for Usermode	END TEST	
4			Restart of machine in Usermode		

Pass:

No errors occurred during Exit Testmode.
All variables set for User.
No garbage in Memory.

8 ERROR CODES

The error codes are divided in three groups. One group is responsible for the fax functions the second group for the SMS feature (Country dependent)and the third for the printer. If an error occurs during the transmission you will be informed by the error report which is printed out. This list can be separated printed out by pressing M 42 and then the OK button.

8.1 FAX ERROR Codes:

Fax error codes	Description
00	No error.
01	Destination number not answering.
02	Destination number is burned.
03	User pressed the STOP key.
04	Wrong key pressed.
05	Scanner error.
06	Printer error.
07	Protocol error.
08	Check the document quality.
09	No document on the polled device.
0A	The device was polled but there were no document.
0B	Number of sent pages different from input number.
0C	Received document too long.
0D	Receiving failure.
0E	No file or corrupted file to be sent.
0F	Document coding incompatible with the receiver.
10	Document format incompatible with the receiver.
11	Protected access.
12	Printer resource not available.
13	Memory full.
14	Printing queue full.
15	No mailbox on the receiver.
16	No forwarding group on the receiver side.
17	No base on the distant device.
18	Forwarding unavailable.
19	Transmission stopped by the distant device.
1A	Training rejected by the distant device.
1B	ACEE coding/decoding default.
1C	Distant device is not a fax device.
1D	Telemaintenance not available on distant device.
1E	Telemaintenance rejected by distant user.
1F	Keyboard resource not available.
20	Telemaintenance stopped by user.
58	Distant device is not a fax device.
59	T30 stopped on NoID event.
5A	Paper jam during receiving.
5B	Telephone number is burned. The fax tries the next one.
5C	Unknown event to T30.
5D	CnxID was received while going on-hook.
5E	Unknown distant device answer.
60	Scanner resource not available.
61	Automatic dialing not available.
62	Unknown software crash.
63	Distant device is busy.
64	Transparent mode handshake failed.

8.2 SMS ERROR Codes (Country dependent):

Value	Error	What you can do
00	No error	
01 – 09	Server errors (Protocol 2)	Check if the user has subscribed to the service. Check if the SMS destination number type is handled by the SMS provider.
10 – 16	Low level errors	Check the service center numbers in the device
20 – 30	Protocol errors	Check the service center numbers in the device
41	Memory full	Check the number of received SMS.
50	Communication error	
60	User stop	
61	Wrong service center number	Check the service center numbers in the device
62 – 68	Line errors.	Check if the device is correctly plugged to the telephone network.
70 – 74	Server errors (Protocol 1)	Check if the user has subscribed to the service if required by the provider. Check if the SMS destination number type is handled by the SMS provider.

8.3 PRINTER Display Messages

Message on Display	Message Type	Description
CLOSE PRINTER COVER	STATUS	CLOSE PRINTER COVER
PAPER EMPTY REFILL PAPER	STATUS	REFILL PAPER CASSETTE
PAPER JAM REMOVE PAPER	ERROR	PAPER-INPUT JAM
PAPER JAM NB 2 REMOVE PAPER	ERROR	PAPER-CENTER JAM
PAPER JAM NB 3 REMOVE PAPER	ERROR	PAPER-EXIT JAM
PAPER FEED REPLACE PAPER	ERROR	PAPER MISS FEEDING
CHECK PRINTER: 01 RESET DEVICE	ERROR	FUSER TEMPERATURE TO HIGH
CHECK PRINTER: 02 RESET DEVICE	ERROR	FUSER TEMPERATURE TO LOW
CHECK PRINTER: 04 RESET DEVICE	ERROR	POLIGONE MOTOR ERROR
CHECK PRINTER: 05 RESET DEVICE	ERROR	SYNCRONISATION OF LASERBEAM FAILED
PAPER SIZE REPLACE PAPER	ERROR	WRONG PAPER SIZE
HEATING PLEASE WAIT	STATUS	
INSERT TONER TONER LOW	STATUS	REPLACE TONER

9 FIRMWARE UPGRADE (WINDOWS 2000 / XP)

9.1 To launch the utility:

- Command line : TelUSB2 [Full path of the binary file to upload]
- Double click on the TelUSB2.exe icon
- Double click on the binary file to upload (.bin files need to previously be associated with TelUSB2.exe in Windows Explorer).

TelUSB2 always gives the current state of the device. The utility is registered to the system to be notified when the device is plugged or unplugged or when the mode of the device changes. You do not need to restart the utility after plugging or after switching mode.

9.1.1 States:

- No USB MFL/C5 device detected
  Device is not switched on or USB wire is not plugged in.
- MFL/C5 in standard mode. Switch to upload mode.
  Device is in normal mode. You need to switch for upload mode before proceed.
- MFL/C5 ready for upload
  Device is ready to proceed.

If TelUSB2 is launched by specifying a file name as command line parameter or by double clicking on a binary file, the utility will automatically try to upload the file. Then, if the file is successfully uploaded, the utility will be automatically closed. If upload failed (device not plugged or not ready) you can retry by clicking the upload button.

9.2 To select a binary file to be uploaded:

- You can specify its full path in command line parameter (automatic upload mode).
- You can double-click on a binary file (.bin file needs to be previously associated with TelUSB2.exe in Windows Explorer) (automatic upload mode).
- You can drag and drop a file from the Explorer to the TelUSB2 utility.
- You can use the “Browse” button.
- You can directly write the full path of the file in the edit filed.

9.3 To start upload:

1. Copy the Software for Firmware update (Teleloader) on your PC to the local drive.

2. Activate the service function as follow, press on your machine Menu * #.
   Display show:

```
1> SOS1
2  SOS2
```

3. Confirm with OK and the display show:

```
SOS1
00100001
```

4. Press the key 1 to change the Bit 8 from 0 to 1, to activate the service function.

```
        SOS1
Bit 8 → 10100001
```

5. Confirm with OK and then press STOP to exit.

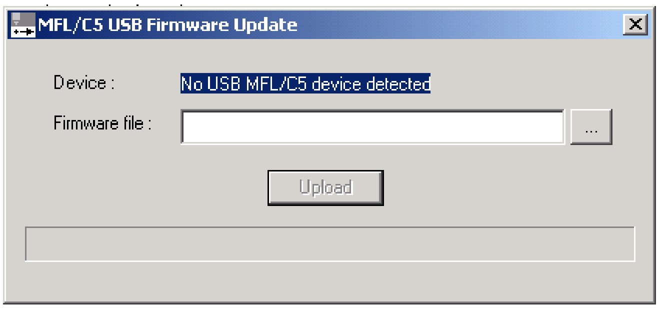
6. Press MENU * 4 to activate the TELELOADING function.
   Display show:

```
TELELOADING
IN PROGRESS
```

7. Start the program TelUSB2.exe for example with double click on the Teleloader icon.

8. Following windows can appear on the PC screen (see figure 1 / 2).

A.)



MFL/C5 USB Firmware Update

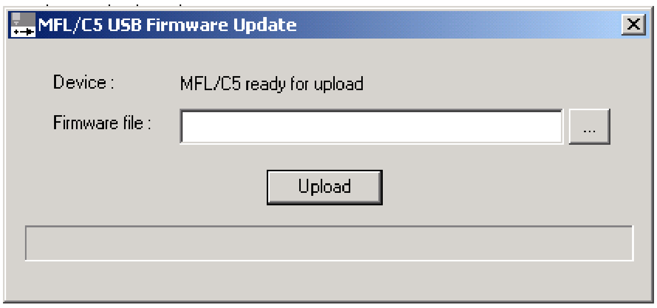
Device : No USB MFL/C5 device detected

Firmware file :

Fig. 1

No “*USB MFL/C5 device detected*”, means device not connected to PC or connected but without power or.

B.)


MFL/C5 USB Firmware Update

Device : MFL/C5 ready for upload

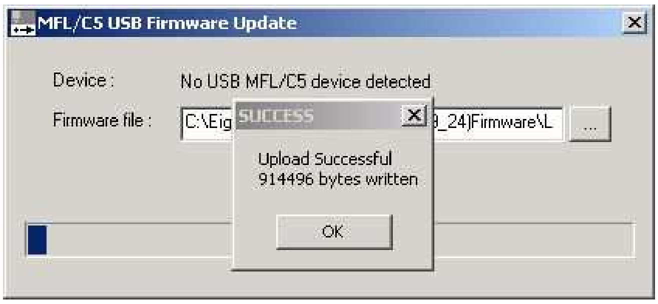
Firmware file :

Fig. 2

“MFL/C5 ready for upload” means the device is ready for firmware upgrade

9. Press the Browse Button ... to select the location of the Firmware Binary file

10. Press the Upload Button and the upload will start.


MFL/C5 USB Firmware Update

Device : No USB MFL/C5 device detected

Firmware file : C:\Eig _24)Firmware\L

SUCCESS

Upload Successful
914496 bytes written

Fig.3)

You will get the message above in case of a successfully upload (see figure 3).
After a while the device will continue with a reboot and starts with the easy install procedure.

11. Go through the easy install procedure to finish the update process.

12. Make a “ White Reference (Menu * W) “ adjustment.

10 Customisation of the Device

10.1 Introduction

This chapter describes the procedure of setting the customization on a device.
It provides information about working with customizations and further information about them.
All the following operations are done in an active Shell/Prompt like the MS-DOS-Prompt which is used under Windows 98. The commands have to be typed and executed in the *Commflag* directory to work properly. The customization must be also done if you swap a mainboard with a new one in case of a repair.

SIMPLY TO SET THE CUSTOMIZATION

1. ENTER SERVICE MODE
2. TYPE THE KEY SEQUENCE.   M   *   i
3. TYPE THE CODE 07 AND CONFIRM WITH OK (OKI = 07)

10.2 Commflag

For uploading the customization to the device, the software *Commflag* is needed.

10.3 Communicating with the Device

The communication with the device is done via an USB cable (as usual). The difference is the used program *Commflag.*
To make the device ready for the process, it has to be entered in the test mode. Activating the Bit switch SOS1 Bit 8 does this. To enter in the test mode press the key combination **Menu # * 0**.
To prevent a toner counter reset, Test Code 100 with Parameter 00 must be inserted before uploading a new customization file. Now the device is ready for communication.

10.4 Reading the customization of a Device

For reading the customization use the following command:

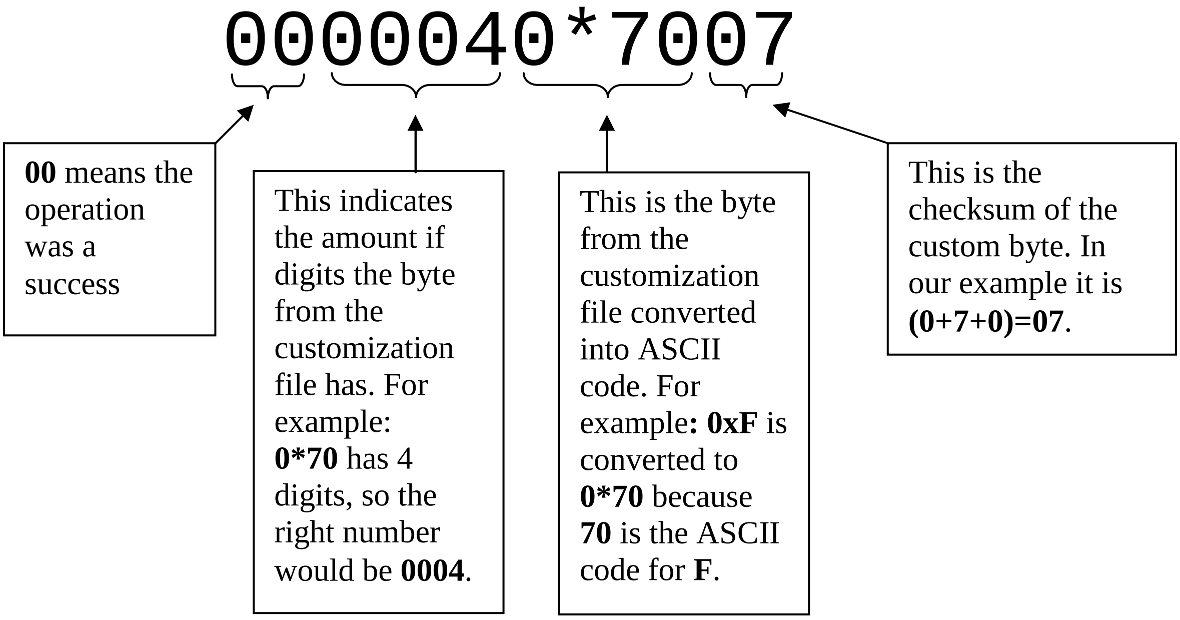
```
commfl #10112
```

This command means reading.

Then the output should be like this:

```
Sending #10112 …
#10112 sent.
Reading …
Returned: 0000040*7007
```

The return value is interpreted in the following sequence:



00 means the operation was a success

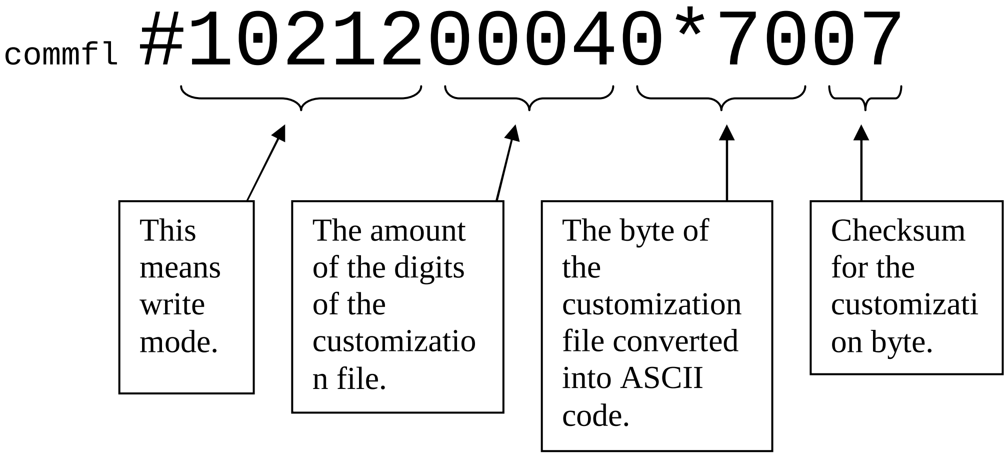
This indicates the amount if digits the byte from the customization file has. For example: **0*70** has 4 digits, so the right number would be **0004**.

This is the byte from the customization file converted into ASCII code. For example**: 0xF** is converted to **0*70** because **70** is the ASCII code for **F**.

This is the checksum of the custom byte. In our example it is **(0+7+0)=07**.

10.5 Uploading the customization to a Device

The upload is done with *Commflag* too. The command is very similar to reading:



This means write mode.

The amount of the digits of the customization file.

The byte of the customization file converted into ASCII code.

Checksum for the customization byte.

Then there will be an output like this:

```
#1021200040*7007 …
#1021200040*7007 sent.
End of mission
Reading …
Returned: 00
```

00 means the operation was successful.

The table below (Tab.1) shows all the different customizations that currently exist. The most interesting values are there the ASCII code (for the value to be transmitted) and the shortcut (for the automatic upload program).

Table 1: Customization sets

File 2	Hex code	ASCII code	Shortcut	Calculated code
l3_oki.bin	0x07	07	oki	00020707

10.6 Leaving the test mode

To exit the test mode, enter 136 (delete all customer settings) or 236 (customer settings preserved) on the device. The Device will reboot and prompt with the country selection.

10.7 *Commflag* Batch File

There exists an addition to *Commflag* that automates parts of the process. To use this batch file it has to be present in the *Commflag* directory. To work with this batch file the L2 has to be in test mode.

10.7.1 Checking the current customization

The command:

```
commflag check
```

shows the active customization. The output is very similar to the output described in “Reading the customization of a Device”. To decide if the current customization is correct, please refer to [Table 1] and compare with the column “Calculated code”.

10.7.2 11.7.2 Activating a new customization

The syntax for activating a customization is:

```
commflag upload <shortcut>
```

The new customization will be uploaded. The required shortcut can be found in the table above [Table 1].

10.7.3 Leaving the test mode via the batch file

There exists two ways to exit the test mode. The simple ones are these:

```
commflag quit
```

or

```
commflag -x
```

The more advanced way is a combination with the upload and check command. Only attach a `–x` at the end of the command. These are two examples:

```
commflag check –x
```

or

```
commflag upload <shortcut> -x
```

III Service

In this Chapter you can find

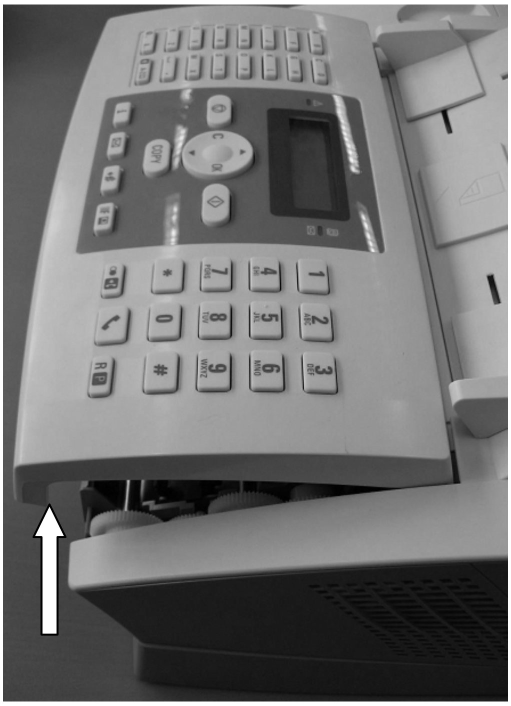
- Illustrated disassembly
- PCB-Architecture and descriptions
- Technical data
- Spare part list

11 DISASSEMBLY

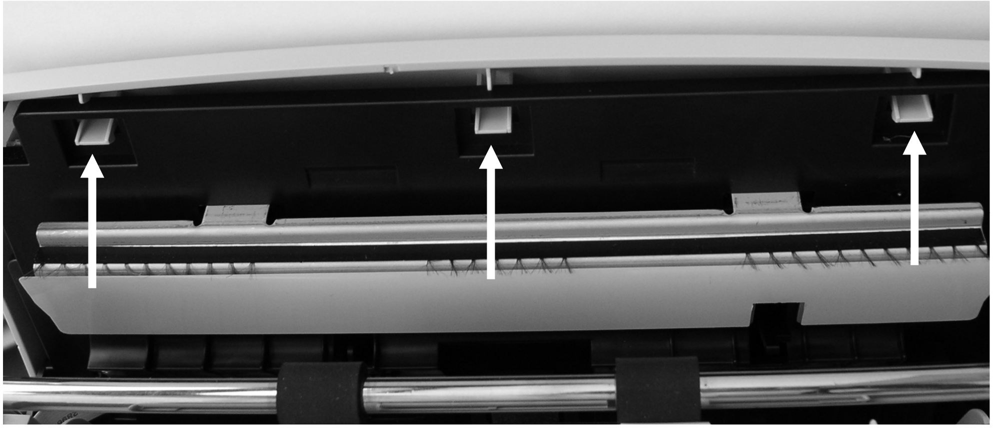
Warning!
Disconnect the Power from the set before removing any cover!
Remove all accessories from the set.

11.1 Remove Operation Panel

1 Open the panel

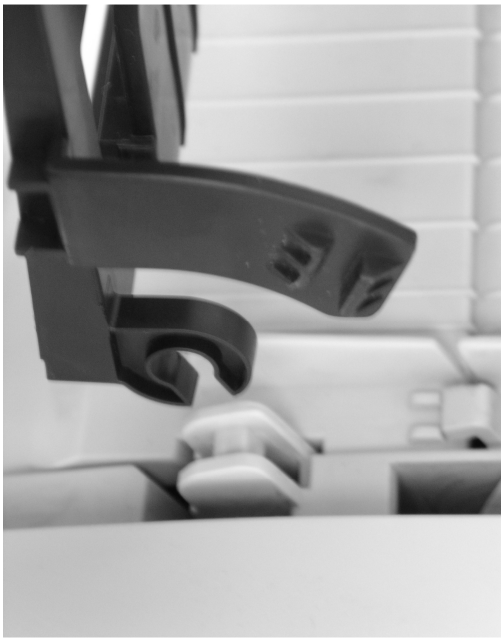


2 Press the 3 snaps on the front underside of the panel
3 Push the panel forward to unclip the hinges
4 Remove the OPU cable



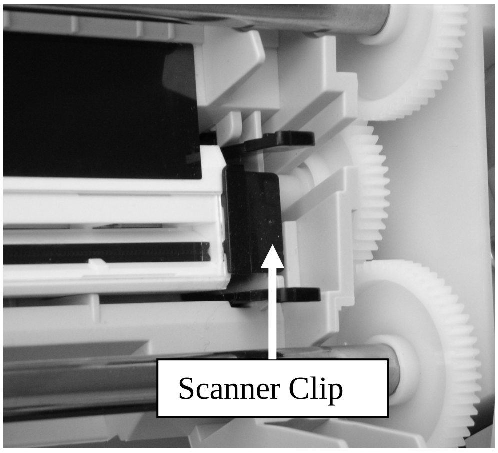
11.2 Remove Upper Guide Assy

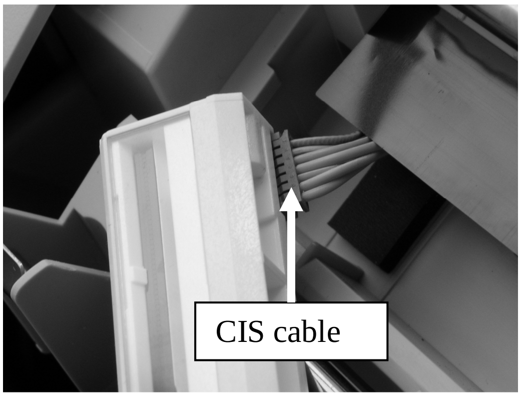
1 Press the left guides
2 Lift the left side of the Upper Guide Assy up,
to unclip the suspensions
3 Move the part to inside direction to unclip
the right nose



11.3 Remove CIS

1 Press and remove the scanner clip
2 Lift the CIS carefully

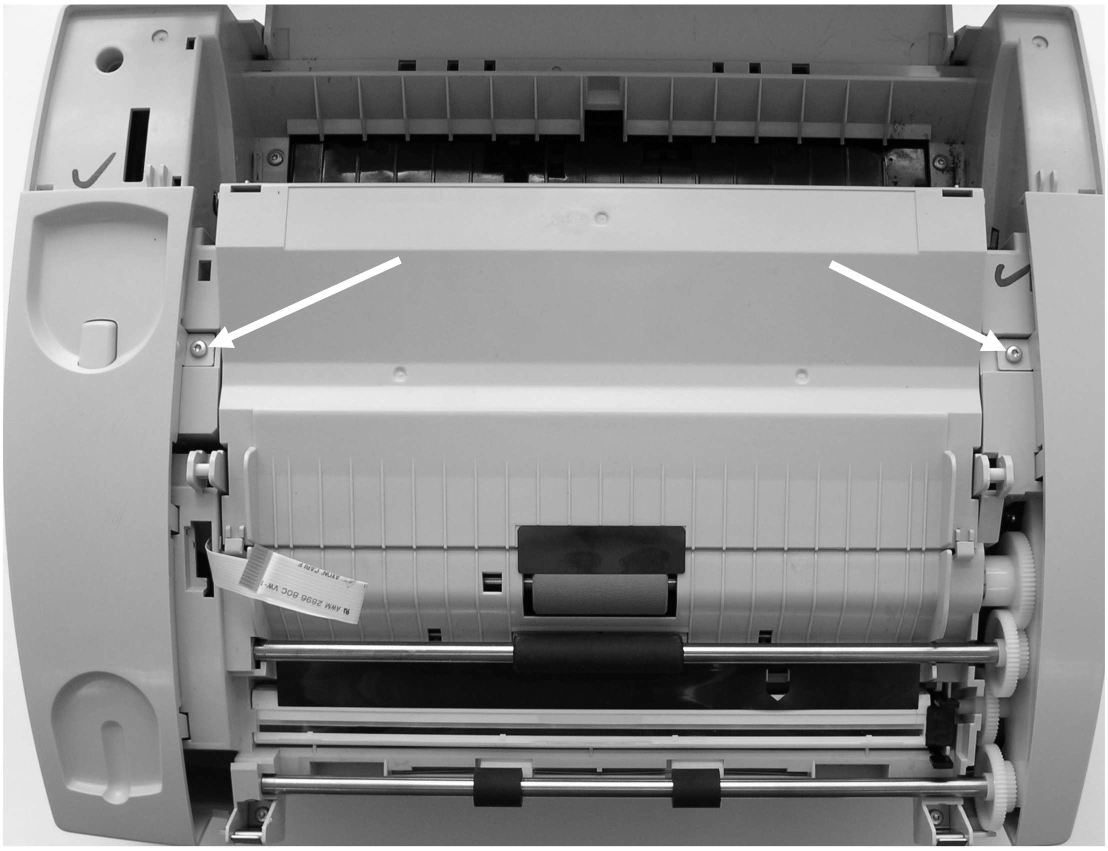




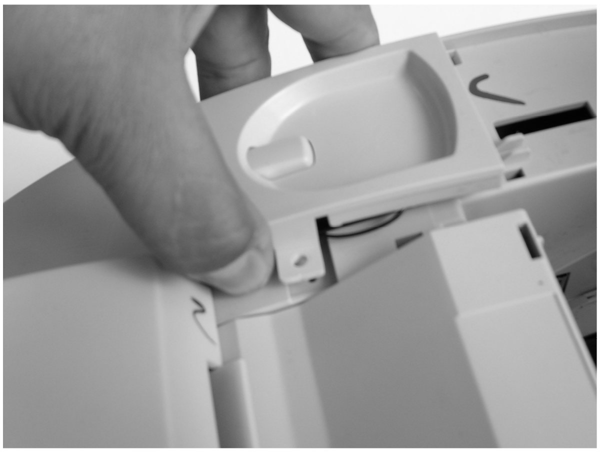
3 Disconnect the CIS cable
4 Lift the CIS and check the scanner foil

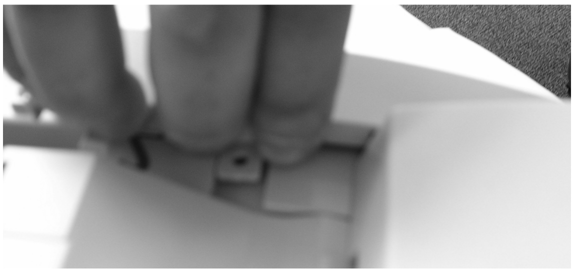
11.4 Remove Main Cover

A.) Remove Handset Cover and Right Cover



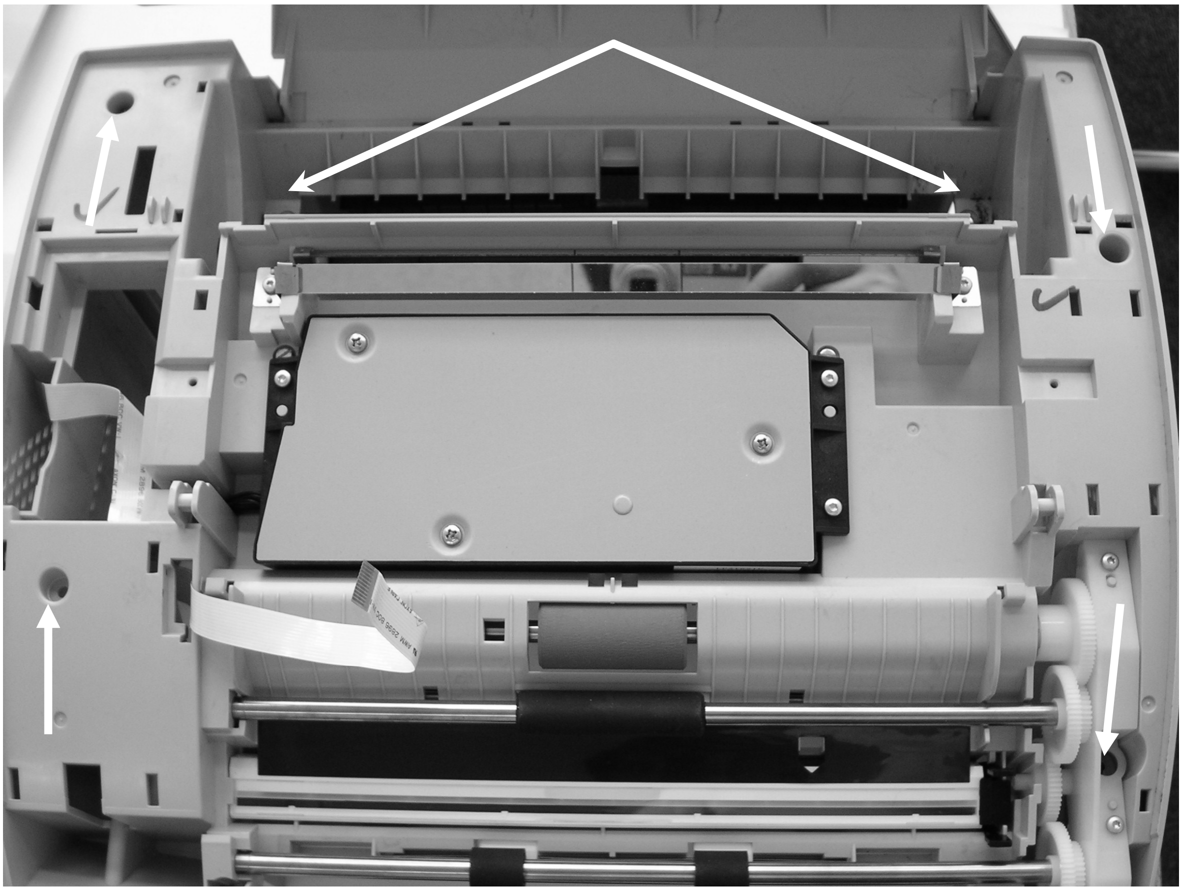
1 Remove 2 screws of the Right Cover and the Handset Cover





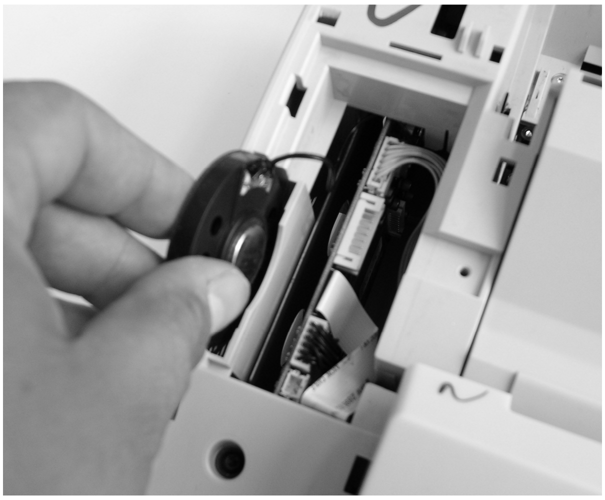
2 Remove the Handset Cover with pressing the 2 snaps
3 disconnect the Hook switch cable from the main board (if the machine type with Handset)
4 The same to remove the Right Cover, press the 2 snaps to remove

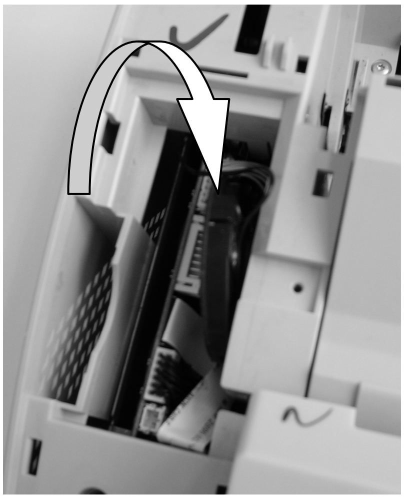
B.) Remove Top Cover Main Housing



1 Remove 4 screws (see the figure), and 2 screws inside the machine (under the toner)

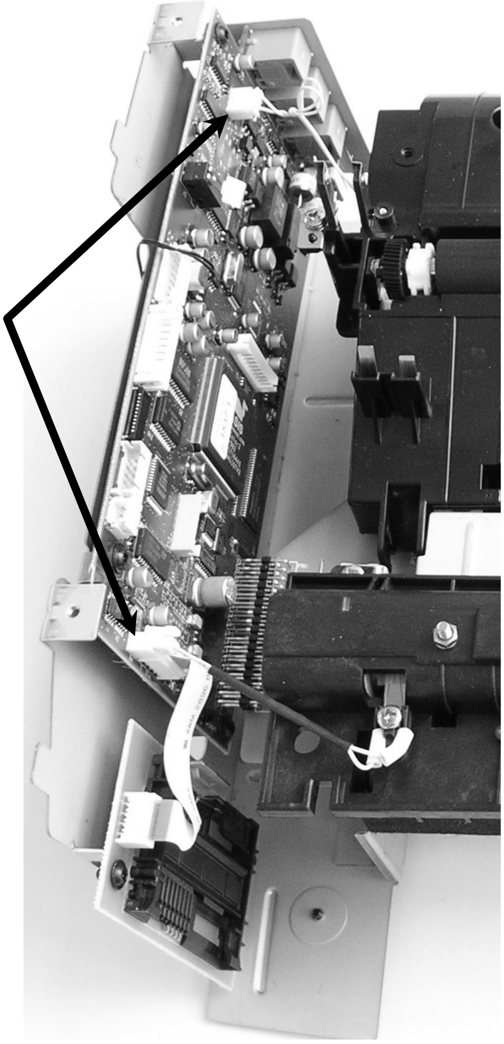
2 Lift the Loudspeaker and put it on the side of the Main board

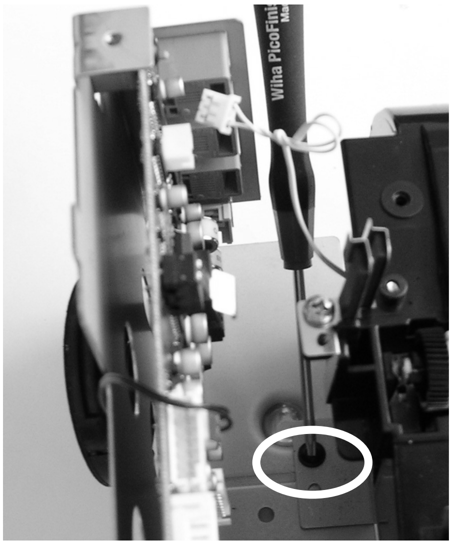


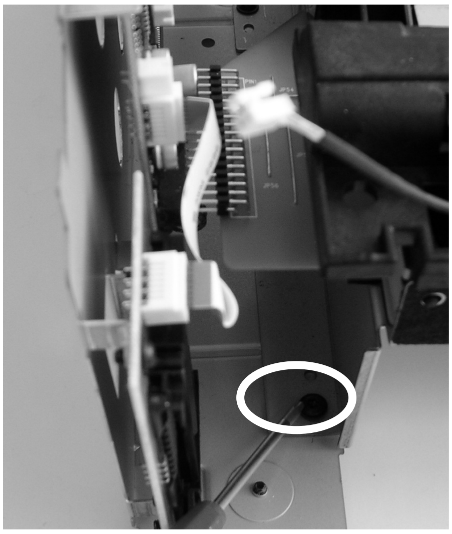


3 Disconnect the LSU cable to the main board
4 Lift the Main housing up

11.5 Remove Main Controller PCB

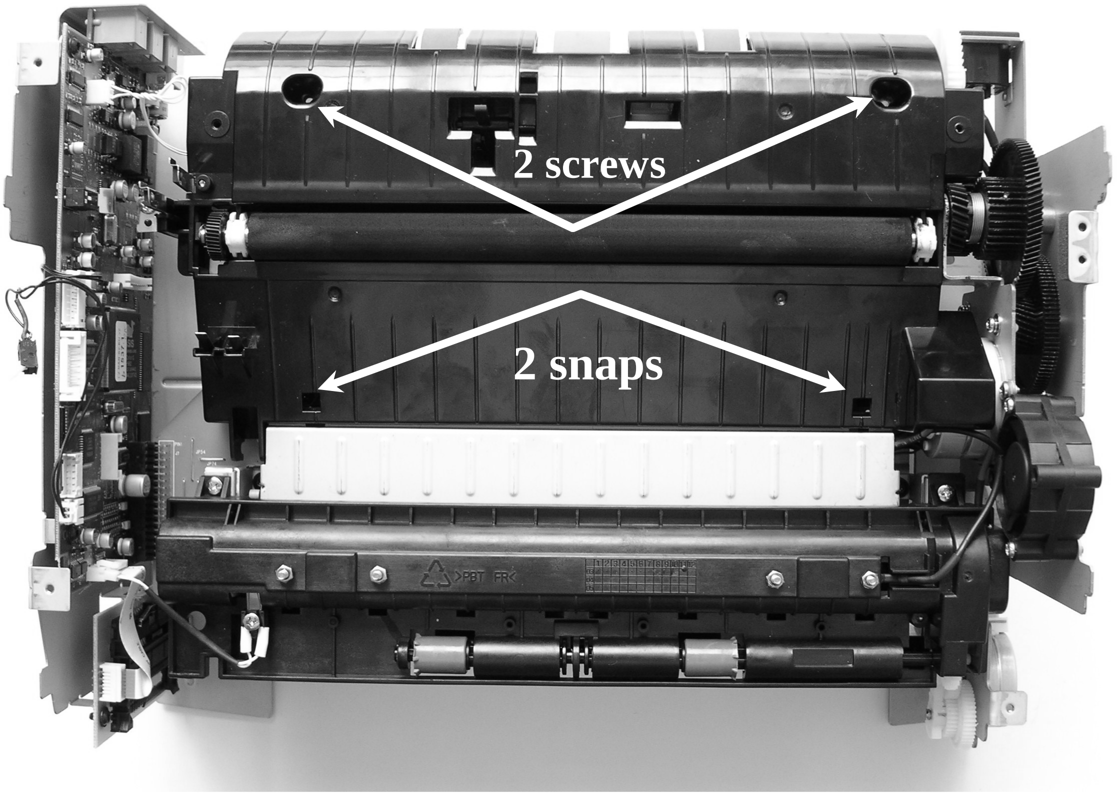






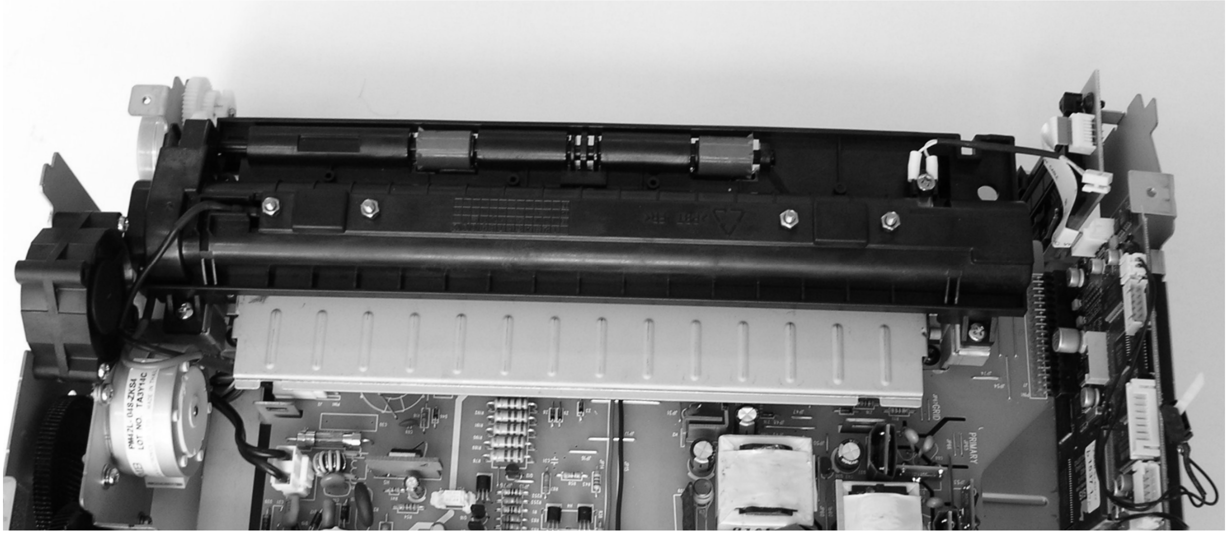
1 disconnect thermistor cable and Hook switch cable
2 Remove 2 screws from the bottom of the Main controller Bracket

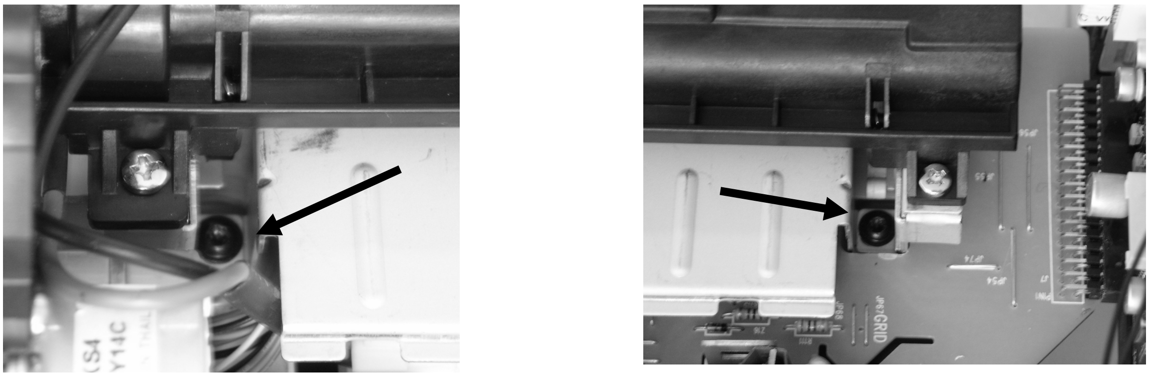
11.6 Remove Pick Up Module


2 screws
2 snaps

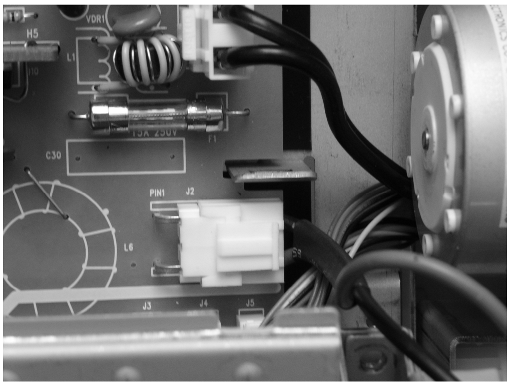
1 Remove 2 screws and 2 snaps (see fig.)
2 Lift the Pick up carefully
3 Disconnect the solenoid cable to the PSU

11.7 Remove Fuser Unit





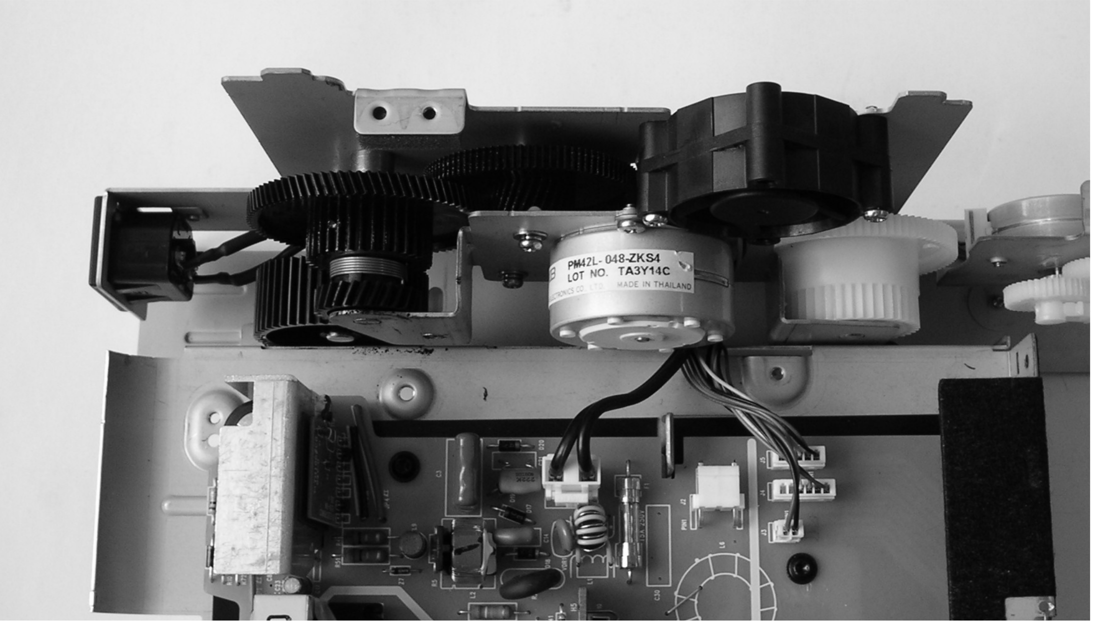
1 Remove 2 screws
2 Lift the Fuser from the backside to unfix the nose on the front carefully



3 Disconnect the Fuser connector to the PSU

11.8 Remove Drive Module

1 Disconnect 4 cables to the PSU
2 Remove 2 screws on the bottom of the Bracket of Driving module
3 Remove the ground screw


PM42L- 048-ZKS4
LOT NO. TA3Y14C

12 HARDWARE ARCHITECTURE

12.1 13.1 OBJECT

Introduction

This document is the specification for Mainboard L2 Laserfax.

12.2 FUNCTIONAL DESCRIPTION

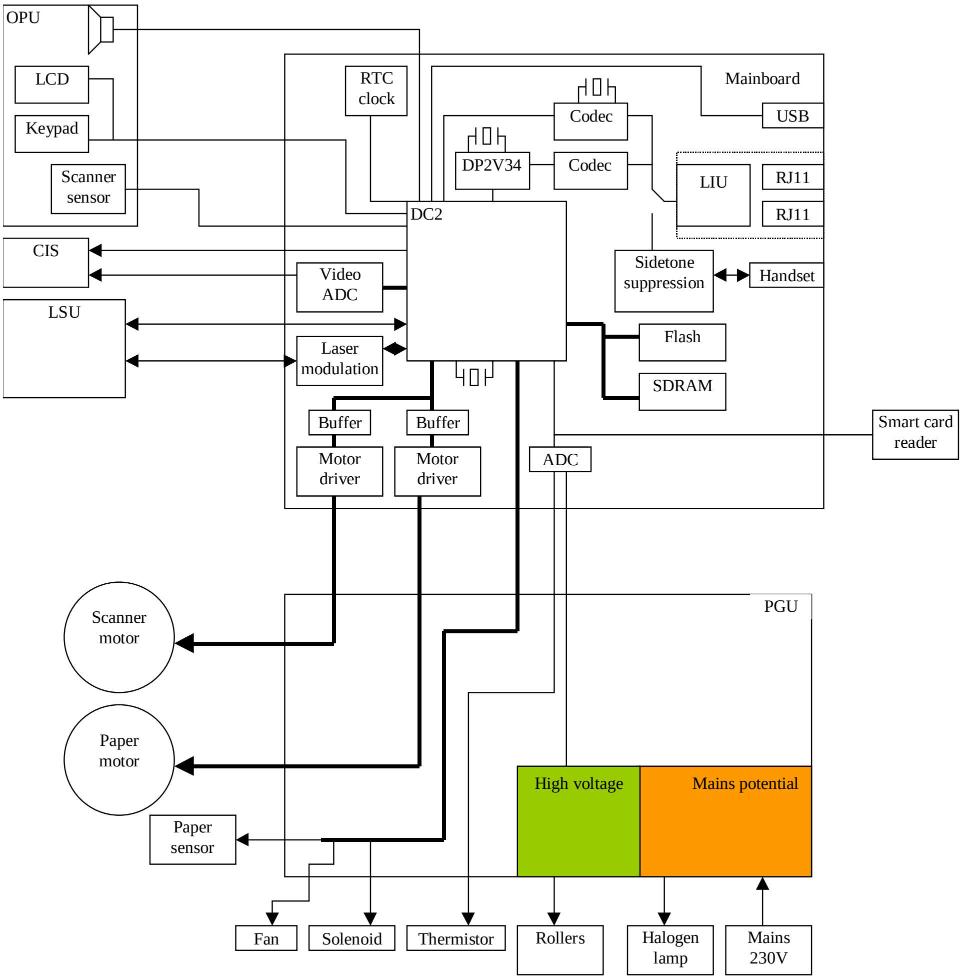
General Purpose

This document describes the hardware architecture for L2 laser fax. The core is based on Digicolor2 ARM9 & video processor.

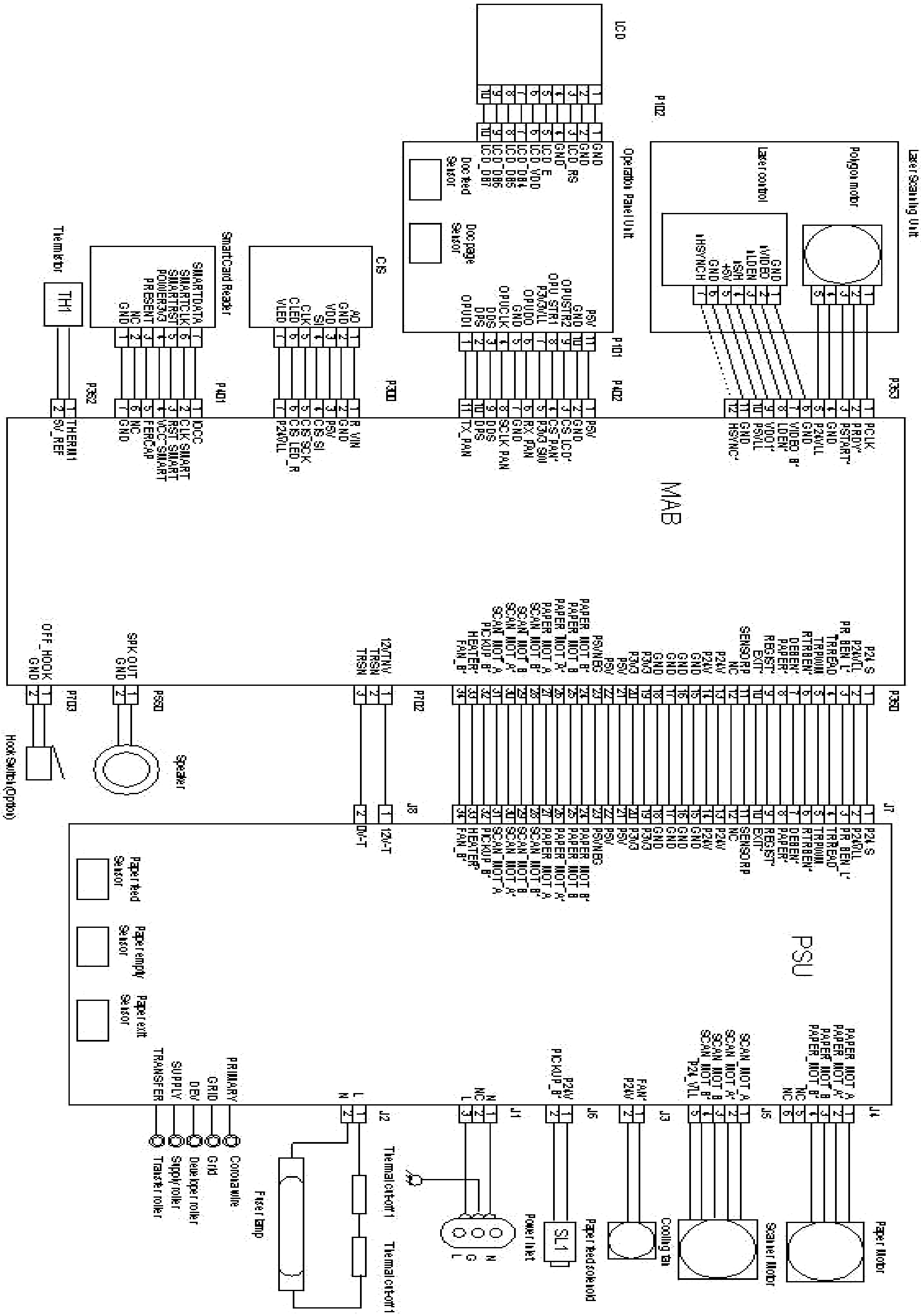
Four equipment of the same PCB are planned:

L2 low end:	14,4k Softmodem, no voice
L2 low end voice:	14,4k Softmodem, corded handset
L2 High end:	33,4k hard modem
L2 High end:	33,4k hard modem, corded handset

12.3 Block diagram


OPU
LCD
Keypad
Scanner sensor
CIS
LSU
RTC clock
Mainboard
USB
Codec
DP2V34
Codec
LIU
RJ11
RJ11
DC2
Video ADC
Laser modulation
Sidetone suppression
Handset
Flash
SDRAM
Buffer
Buffer
Motor driver
Motor driver
ADC
Smart card reader
PGU
Scanner motor
Paper motor
Paper sensor
High voltage
Mains potential
Fan
Solenoid
Thermistor
Rollers
Halogen lamp
Mains 230V

12.4 Wiring Diagram


LCD
P102
Operation Panel Unit
Document Sensor
Doc page Sensor
P101
P402
Laser Scanning Unit
Polygon motor
Laser control
P303
CIS
P300
SmartCard Reader
P401
Thermistor
TH1
P302
MAB
P500
J7
P702
J8
P503
Speaker
P703
Hook Switch (Option)
PSU
Paper feed Sensor
Paper empty Sensor
Paper exit Sensor
PRIMARY
GRID
DEV
SUPPLY
TRANSFER
Corona wire
Grid
Developer roller
Supply roller
Transfer roller
J2
Fuser lamp
Thermal cut-off 1
J1
Power inlet
N
G
L
J6
SL1
Paper feed solenoid
J3
Cooling fan
J5
Scanner Motor
J4
Paper Motor

13 Technical Data

13.1 General

Dimension	370 x 200 x 330mm (W x H x D)
Weight	Approx. 7,25kg
Mains Connection	220 - 240 Volt ~ / 50-60Hz
Power Consumption	Standby < 8,5W Transmission < 17W Reception < 20W Standard
Recommended Ambient	Temperature 5 – 35°C Relative Humidity 15 – 85% Non condensing
Safety	EN 60950-1
Emissions	EN 55022 Class B EN 61000-3-2 EN 61000-3-3
Immunity to electrical noise	EN 55024

13.2 Toner Cartridge

Capacity (5% Black – Slerexe Letter)	
Starter Cartridge	600 pages (ISO 19752)
Consumable Cartridges	2400 pages (ISO 19752)
Con.Cartridges (long life) only 3170, 3175	4800 pages (ISO 19752)

13.3 Scanner

Type	Black and White . 256 grey tones
Scan width	210mm
Horizontal resolution	0,08 – 0,12mm
Vertical resolution	60 – 90g/m2 Legal: 90g/m2
Automatic Document Feeder	20 Documents

13.4 Paper

Capacity	250 sheets
Paper Sizes	A4. 210 x 297 mm
Paper Thickness	0,08 – 0,12mm
Paper Weight	60 – 90g/m2

13.5 Telephone

Connection Type	Public Switched (PSTN) Private Branch Exchange (PABX)
Telephone Book Entries	199 entries

13.6 Fax

Device Type	G3, Super G3
Compatibility	ITU-T30/T30 new
Encoding	MH, MR, MMR
Fax Memory	100/400 Pages
Transfer Speed	33,6K
Horizontal Resolution	8dots/mm
Vertical Resolution	Standard 3,85 lines/mm Fine 7,7 lines/mm

13.7 Copier

Type	Black and White, 64 grey tones	
Resolution	Fast	200 x 300dpi
	Quality	400 x 300dpi
	Photo	400 x 300dpi
Copying Speed	16 Pages/Minute	
Multiple Copies	Up to 99 Pages	

13.8 Scanner

Type	Black and White, 256 grey tones
Resolution	300dpi
Scan Area	Max. 218 x 600mm
Scan With	208mm
Speed	6sec. / A4-Page

13.9 SMS (Short Message Service) *

Gateway	V23
Memory	30 Messages
Message Length	640 Character

* Depending on country and telephone network

14 SAFETY - Test Specification

14.1 Demand

Universal device suitable for use as **IT / HV / ECT - TEST**
for Terminal & IT – Equipment according to EN / IEC 60950-1:2001

14.2 Abbreviations

IT ..... Isolation Test
HV ..... High Voltage Test
ECT ..... Earth Continuity Test
UUT ..... Units Under Test
USB ..... PC Interface
TNV ...... PSTN Line / External
MAINS .. Primary Circuit
SELV .... Secondary Circuit
BODY ... Chassis (earthed)

14.3 Technical data

Test Voltage Range:	0 – 4500 V DC (adjustable)	
Conformity of application:	DIN VDE 0104	
Measurement Current:	I_{max} = 0,25 mA	(⇒ only for HV tests)
	I_{ECT} = 25 A	(⇒ only for ECT test); Duration: min. 1 sec.

Test Voltages: a) U_{T1} = max. 12 V DC ;
b) U_{T2} = 380 V DC ; Duration: min. 1 sec.
c) U_{T3} = 1680 V DC ; Duration: min. 1 sec.
d) U_{T4} = 4240 V DC ; Duration: min. 1 sec.
(3000 V AC)

Rise / Fall Rate: < 1000 V/ms (⇒ automatic discharge after measuring cycle)

14.4 Additional requirements:

Statistical Evaluation:
(via PC)

- count of units under test
- count of faulty units under test
- test results recorded
- serial numbers recorded

14.5 Terminals / plugs

UUT >>> TNV = PSTN-line – ext.
SELV = USB = Body = chassis
MAINS = mains terminal – plugs

IT / HV > see operator's manual of test equipment (available in engineering department)
The principle of measurement is a 4-wire test method.

14.6 Description / Earth Continuity Test / Isolation Test / High Voltage Test

14.6.1 General

No start-conditions are defined; possibility of automatic or manual operation
The IT / HV test - voltage is an adjustable direct voltage (preferred instead AC)
The maximum HV test-current is 0,25 mA and therefore is regarded as safe for humans (no cover necessary)
The duration of the test is 1 second min.
After each test performed, the UUT must be discharged automatically by the IT
High voltage-Test: PSTN-line (TNV-3) / housing, handset ... not applicable
Remark: performed at the Type Examination test

14.6.2 Test Procedure

1) Earth-Continuity – Test -> Earth (mains plug) / chassis (bottom):
To ensure the required earth continuity resistance < 0,1 ohms this test is performed in compliance to the standard IEC/EN 60950-1:2001, clause 2.6.3.3
U_{T1} max = 12 V DC ; I test = 25 A ; t min > 1 sec

2) Isolation - Test -> PSTN-line (=TNV-3) / chassis / USB-ground :
To check the electric strength of the insulation between the TNV-3 and the chassis all devices (100%) are tested at two voltages (I max = 0,25 mA ; t min > 1 sec):

a) U_{T2} = 380 V DC → to check, if the protection device is assembled correctly (e.g. no short-circuit due to loose screws)

Remark: 380 V because of IEC / EN 60950-1:2001, clause 6.1.2.1: requested minimum DC spark over voltage has to be 1,6 times the upper voltage of the rated voltage range

b) U_{T3} = 1680 V DC → to check, if the protection device works correctly (quality issue)
Remark: 1680 V according the datasheet of the used surge arrester: nominal DC spark over voltage is 1400 V ± 20%

3) High voltage – Test -> 100 % -Test primary / secondary with a voltage of 4'240 V DC is performed between MAINS (terminal plugs) and chassis / USB-ground in conformity to IEC/EN 60950-1:2001, clause 5.2.2 (table 3b): U_{T4} = 4'240 V DC;
I max = 0,25 mA; t min > 1 s

4) High voltage – Test -> 100 % - Test PSTN (TNV-3) / mains with a voltage of 4'240 V DC is performed between TNV-3 and mains in conformity to IEC/EN 60950-1:2001, clause 5.2.2 (table 3b): U_{T4} = 4'240 V DC ;
I max = 0,25 mA ; t min > 1 s

15 TROUBLE SHOOTING

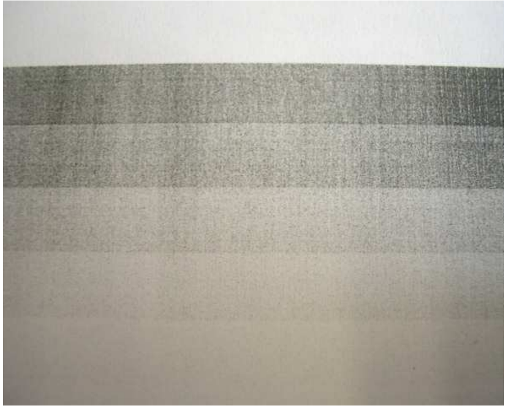
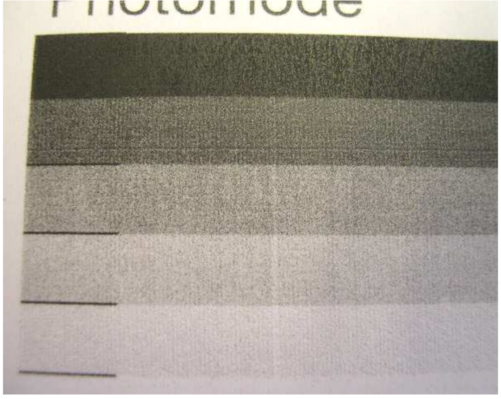
15.1 Overview

FAILURE DESCRIPTION	TO CHECK	ACTION
Bad printout	Grease on Transfer roller? Pick-up contacts blades to cartridge (5 contacts, 4 to PGU & 1 Ground)? Pick-up contacts to PGU (4 to Cartridge and 1 to Transfer roller)? Cartridge OK?	Clean the roller Correct the blades position or replace Pick-up module Correct the position or replace Pick-up module Try with new Cartridge
No printout/No paper feed	Plate Regist guide correct in position? Pick-up unit correct in position? Connection between Pick-up and PGU? Cables from Gear box block the paper or fuser movements? Separation pad in position Solenoid works correct	Correct the position Remove Pick-up and correct the position Check contacts or replace Pick-up Check if cables in Position and all OK Correct the position Correct Solenoid position or connect the solenoid to PGU or replace it
Error message “Check printer device 02”	Connection between Fusing unit to Mainboard OK? Thermistor connection OK?	Check connector or replace the Fusing unit Replace Thermistor, or the Fusing unit when still not solved, replace the Mainboard
Error message “Check printer device 04”	LSU Cable correct both sides connected? Pins of LSU damaged?	Connect the cable correct Replace LSU
Paper Jam	Plate Regist Guide in position? Paper Exit sensor missing or damaged? Fusing unit correct in position? Exit backup roller missing?	Correct position Replace Paper Exit sensor Dismount and correct position Replace the roller

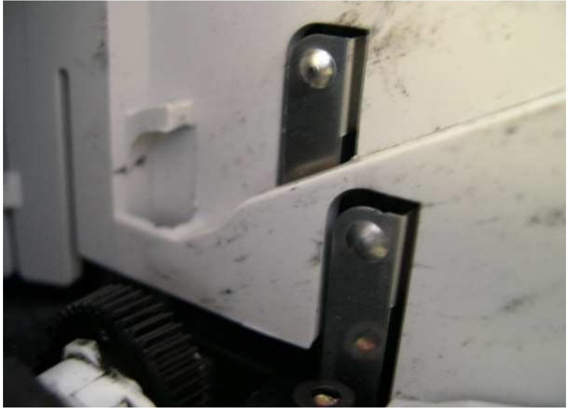
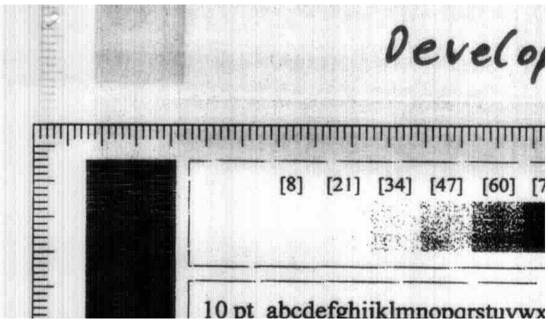
Black copy	Scanner or printer part	Print Function list when OK, check scanner part
	CIS Cable OK	Correct cable position or replace Cable
	CIS damaged	Replace CIS
Black printout	Cartridge OK	Use new Cartridge
	Primary and Grid contacts to PGU	Check Pick-up position to ensure correct contacts to PGU, and clean the contacts
White printout	Cartridge OK?	Use new Cartridge
	Transfer roller and contact to PGU?	Ensure correct contact and clean contact to PGU and Roller
Light printout	Cartridge OK?	Use new Cartridge
	Mirrors in Position or damaged?	Correct the Mirrors position or replace the mirrors
No Document feeding	Document Sensor OK?	Replace Sensor
	Fax motor (Scanner motor) OK?	Change motor
	Gears from Motor to Doc feeding OK?	Check gears on Gear box
Document Jam	Scanner Sheet OK?	Replace scanner sheet foil
	Document feeding roller?	Check and clean if dusty or dirty
No Display	Power OK	Check Power Cable if pluged, if damaged, change Power cable or PGU
	OPU Cable and OPU	Change Cable or OPU
	Display Cable and Display	Replace Display

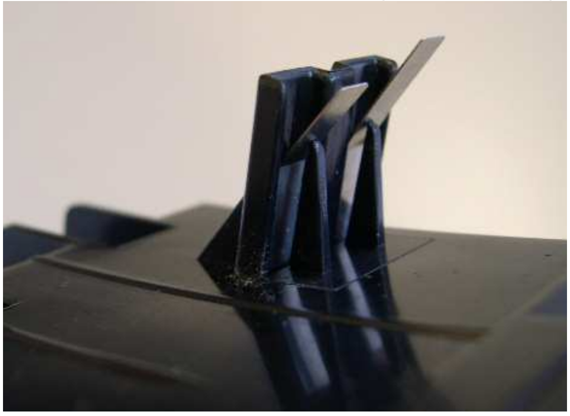
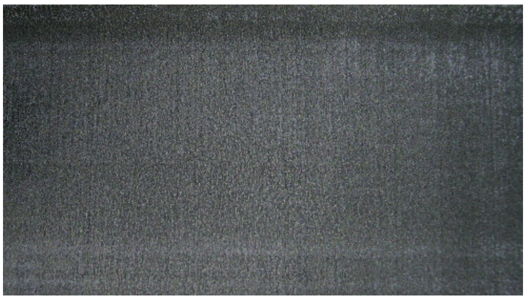
15.2 Examples

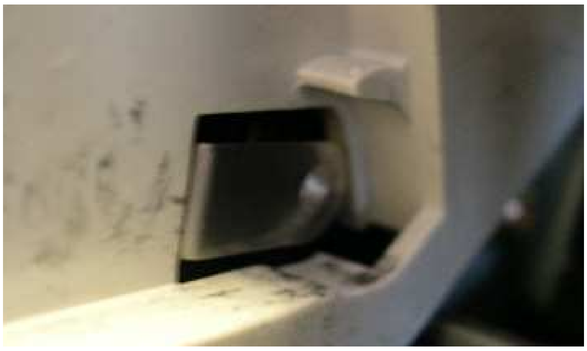
15.2.1 Check with other cartridge

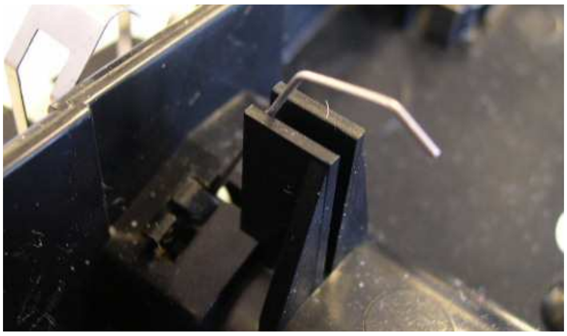
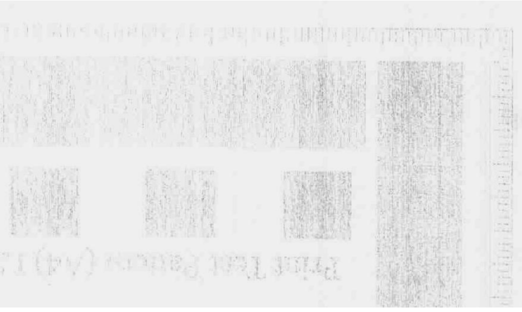
Cartridge empty 	White lines from cartridge (normally very thin) 

15.2.2 Check contacts

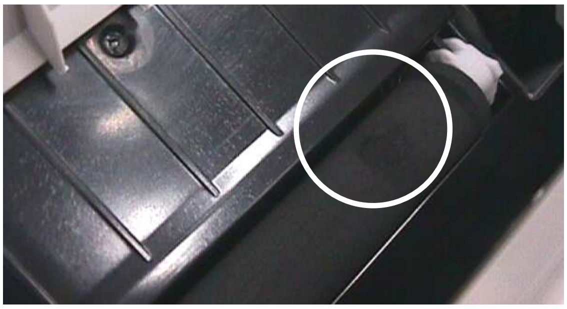
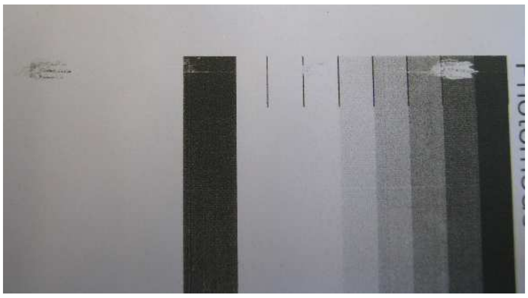
Pick UP-unit contacts between cartridge and PGU (2 contact blades sideways) 	Failure: grey shadows, ghosts  Develo [8] [21] [34] [47] [60] 10 pt abcdefghijklmnopqrstuvwx

Pick UP-unit contacts between cartridge and PGU (2 contact blades sideways frontal way) 	Failure: black page 

Contact electronic-plate to cartridge (ground) 	Failure: copy too bright, white printout possible

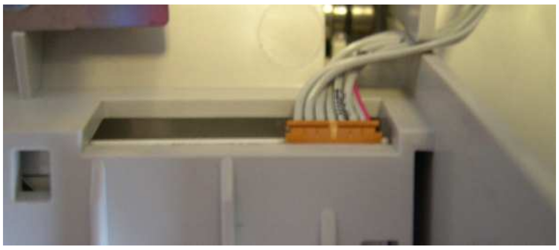
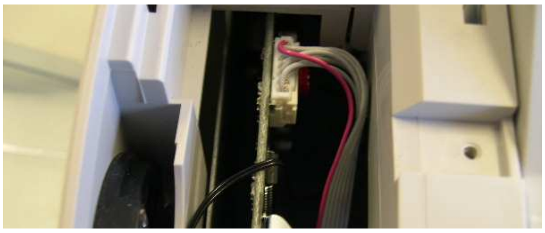
Contact Pick UP-unit between Transfer roller and PGU 	Failure: printout too bright 

15.2.3 Grease on transfer roller

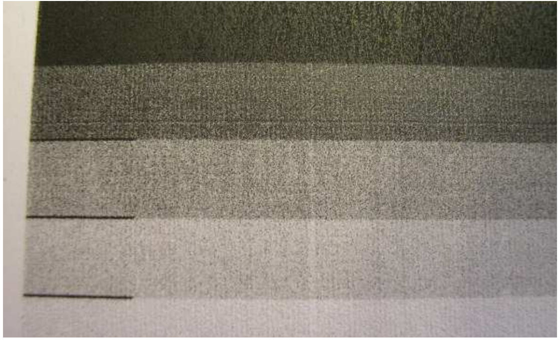
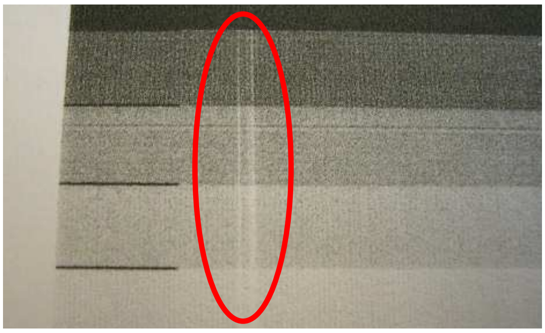
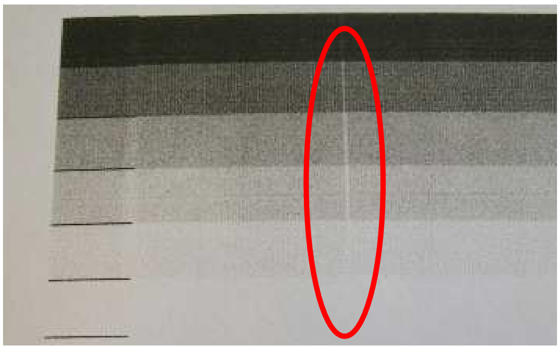
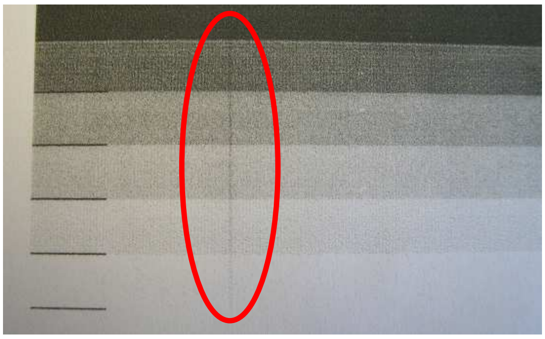
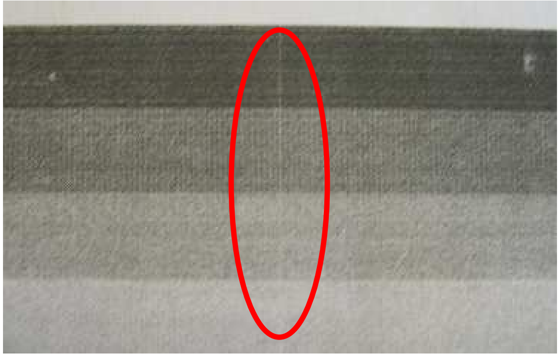
Picture of dirty roller 	Typical printout 

15.2.4 Copy quality

Check if failure is from scanner or printer (black copy)

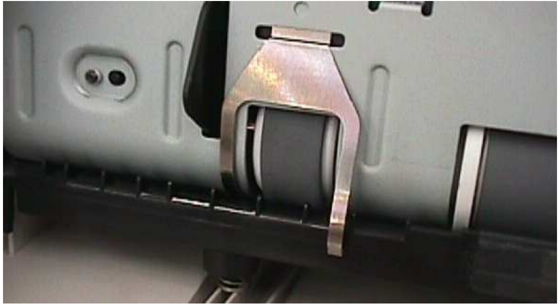
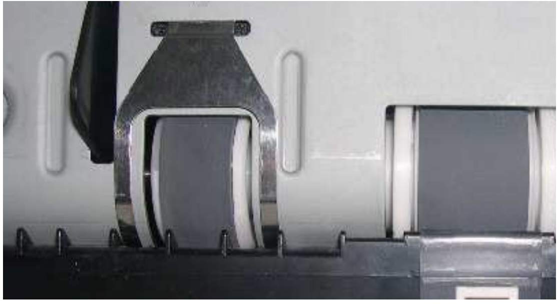
Connection to CIS ok 	Connection to mainboard ok 

Vertical lines different sizes and shapes (mostly on photo mode)

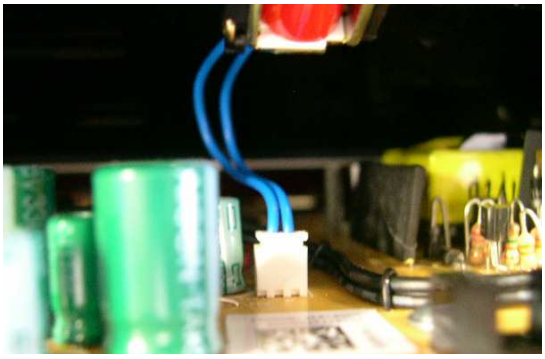
Example bad cartridge -→ replace the cartridge with new one 	Copy with bad white reference-→ make a new white reference 
Dirt on mirrors -→ clean the mirrors 	Dirt on CIS -→ clean the CIS 
Damaged CIS -→ replace CIS 	

15.2.5 No printout / problems with paper feed

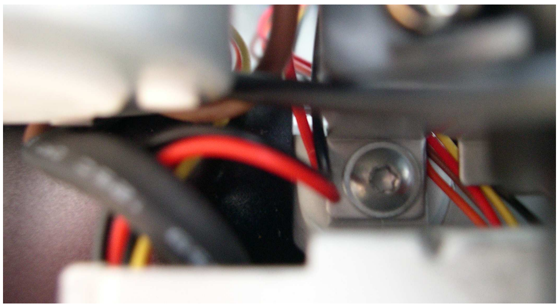
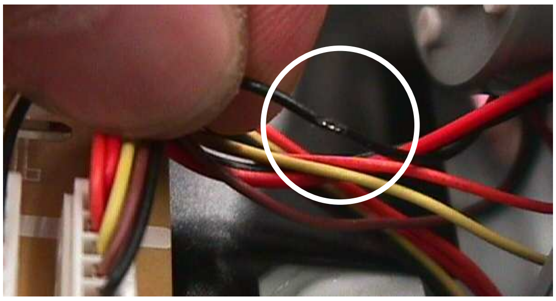
Plate regist guide not correct in position -→ skew paper feeding

Wrong position or broken 	Correct position 

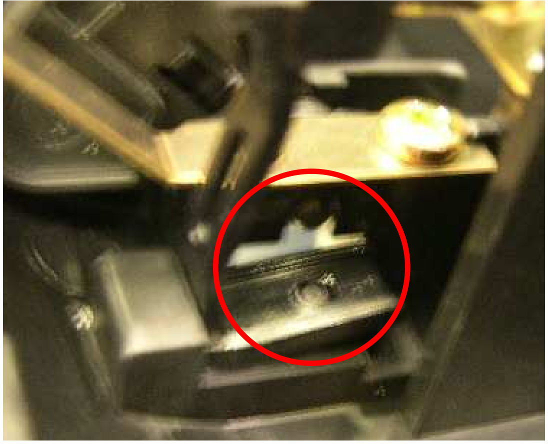
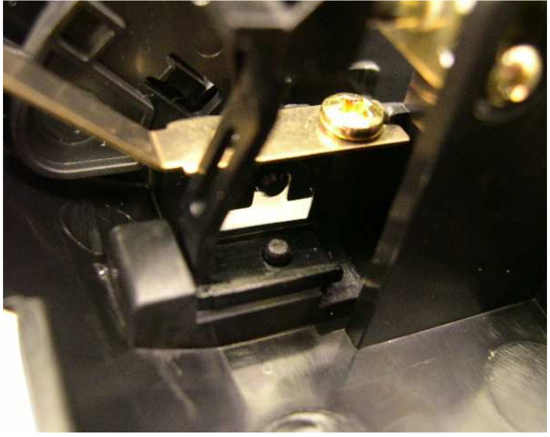
PUP-unit Solenoid not connected to PGU or defective-→ no paper feeding (cannot hear click of solenoid)



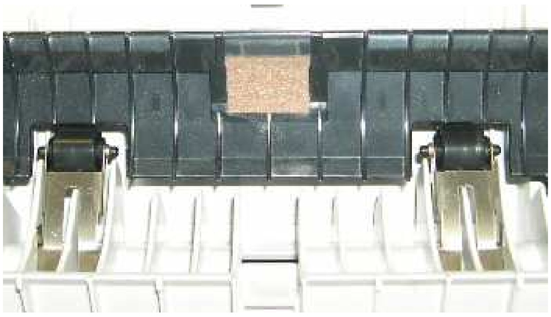
Cables tweaks under fusing unit -→ No paper feeding (couldn't hear the motor drive)

Lever of PUP-unit not correct mounted -→ No paper feeding sometimes but you can hear click of solenoid

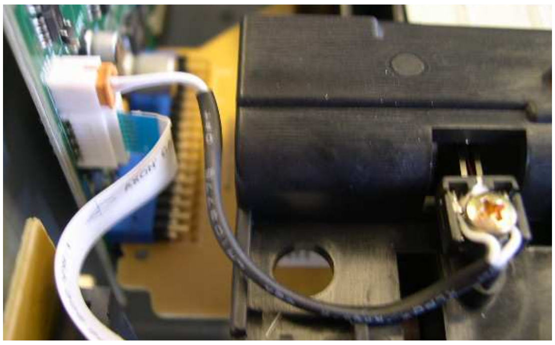
Snapping of lever not correct	Snapping of lever correct
	

Check if Regist Spring correct mounted

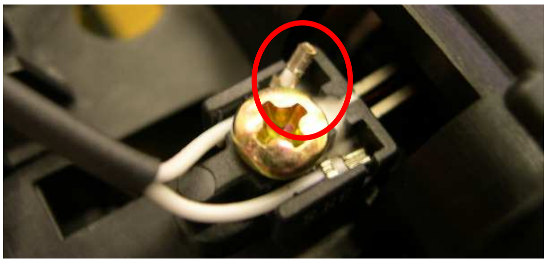
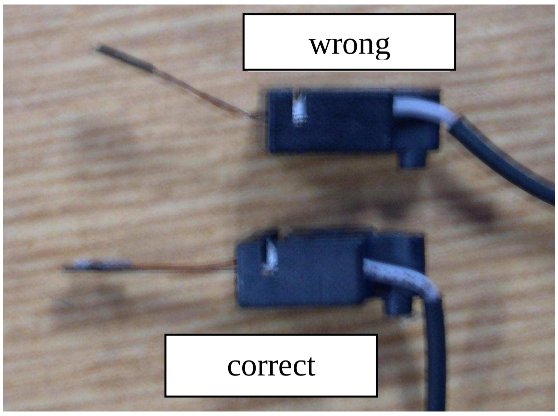


15.2.6 “Check printer device 02”

Check if fusing unit connected to mainboard or cable damaged

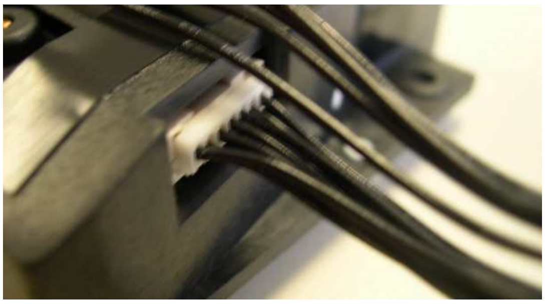


Thermistor on fusing unit damaged

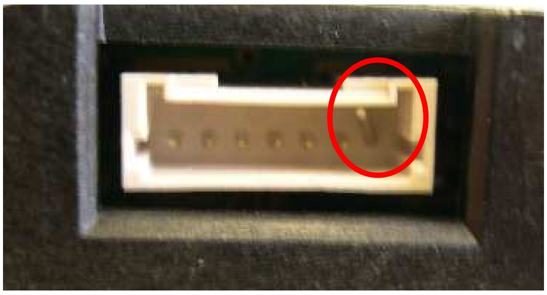
Cable bad connection	Thermistor bended
	

15.2.7 “Check printer device 04”

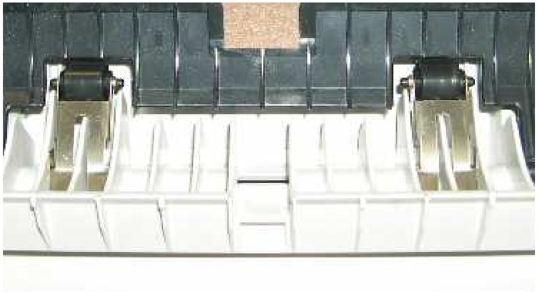
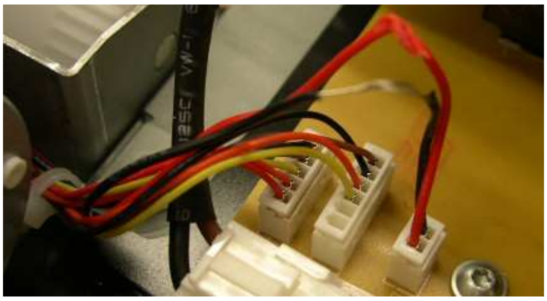
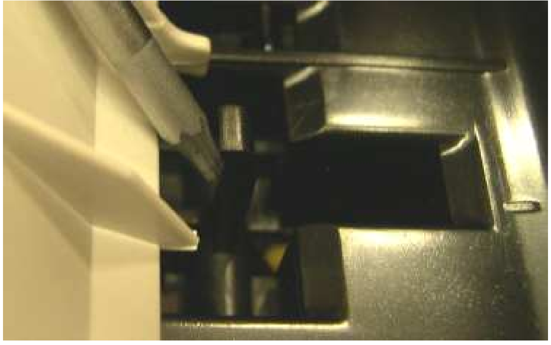
Check LSU cable connection

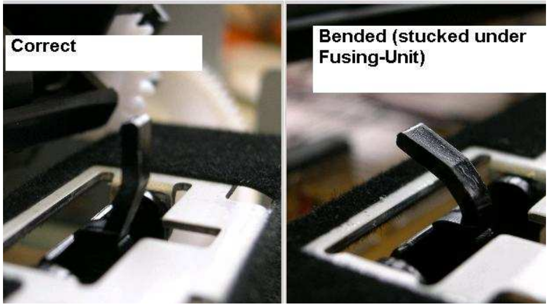
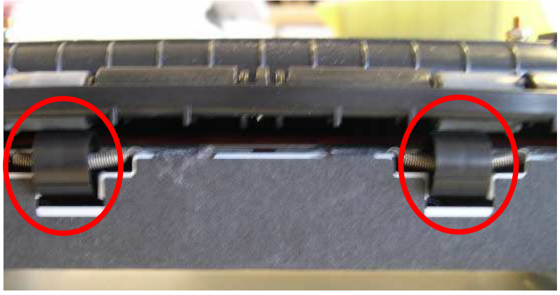
Check Pins of LSU if damaged



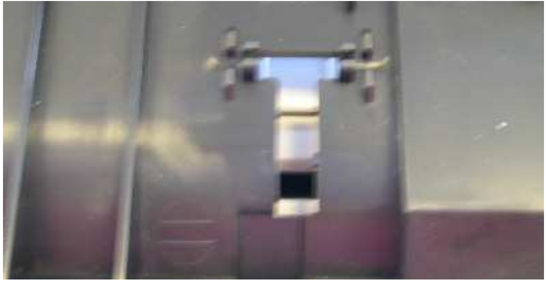
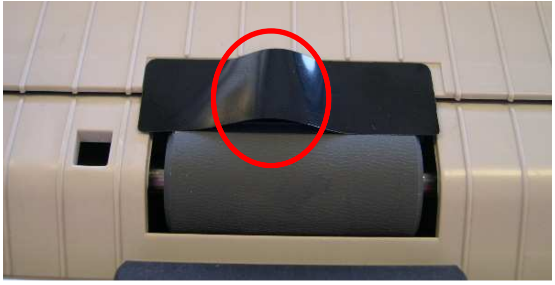
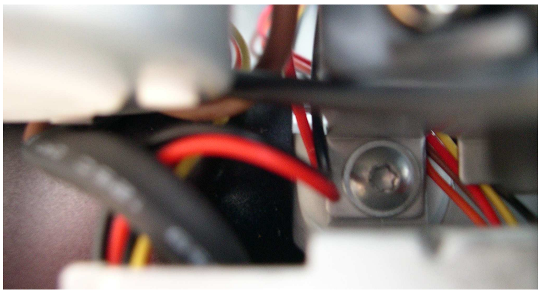
15.2.8 Paper jam 2

Check by pressing Plate regist guide a force, works correct. 	Check if Fan or Motor Cables pressed or screwed under Fuser 
Check if Paper-In-Sensor stucks or damaged 	

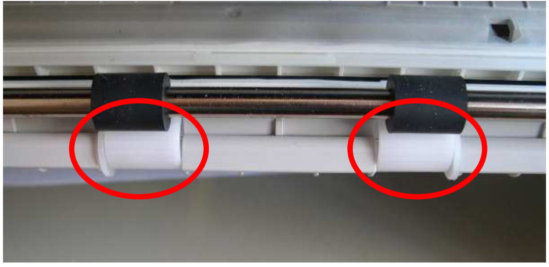
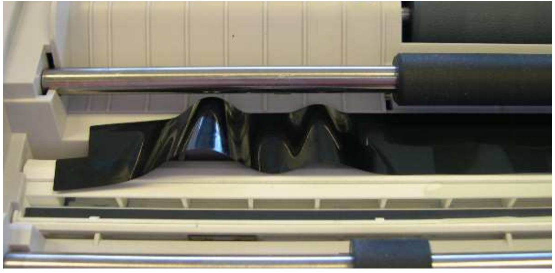
15.2.9 Paper jam 3

Check Paper-Exit-Sensor damaged or missing  Correct Bended (stucked under Fusing-Unit)	Check Exit backup rollers in position or missing 

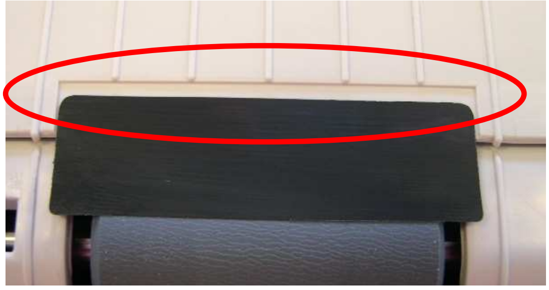
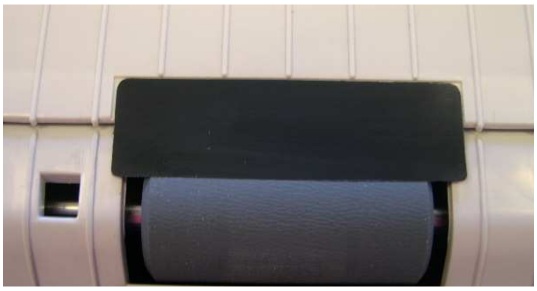
15.2.10 Document feed problem

If Document-Sensor stucks or missing 	LSU cover Foil out of right position 
Check scanner cables connection. 	

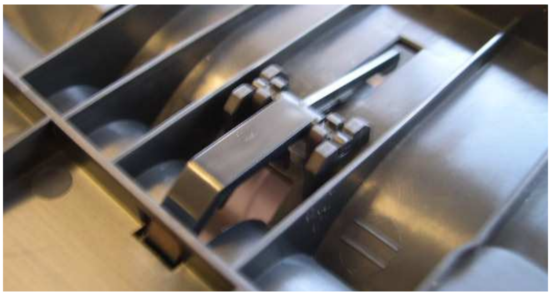
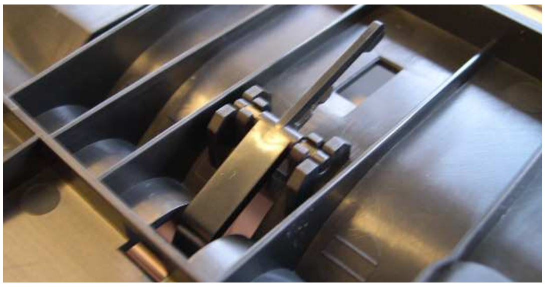
15.2.11 Document jam

Exit-Pinch-Rollers missing 	CIS Foil out of position 

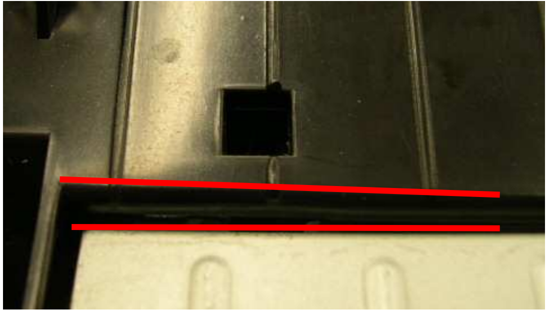
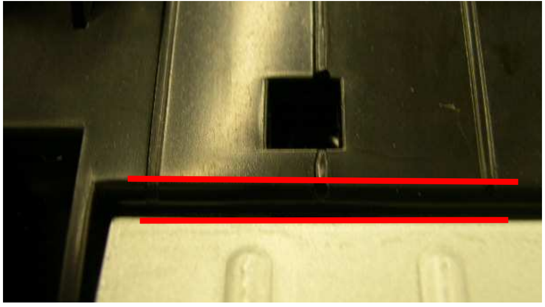
15.2.12 Multifeed of document

Position of foil on LSU-cover wrong 	Position of foil on LSU cover correct 

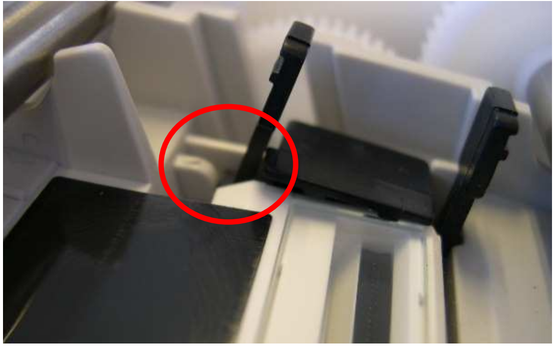
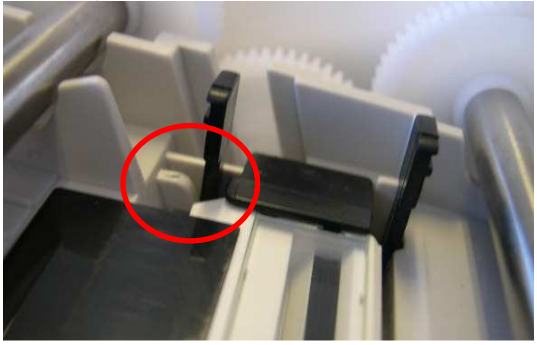
15.2.13 ScanRef-Failures

Document sensor 2 blocked 	Document Sensor 2 Correct 

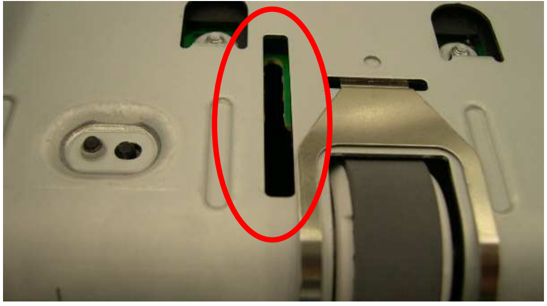
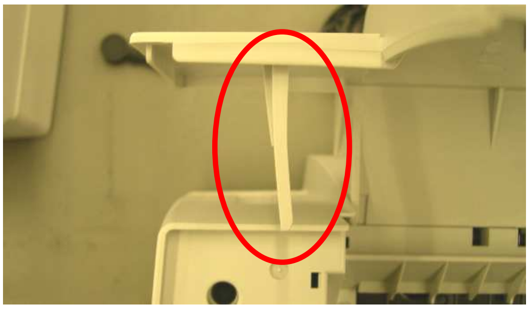
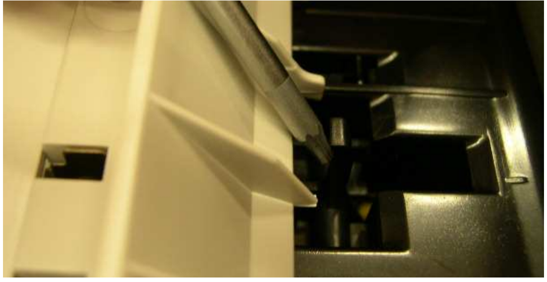
15.2.14 Skew Printer

Check gap between Pick Up and Fuser module Snapping PUP. unit not correct 	Snapping PUP-unit correct 

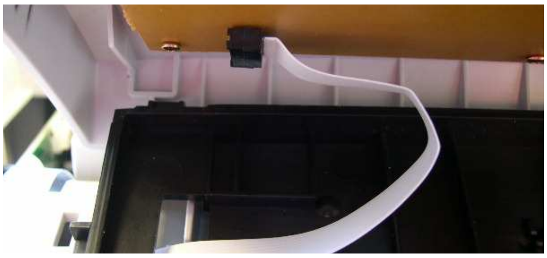
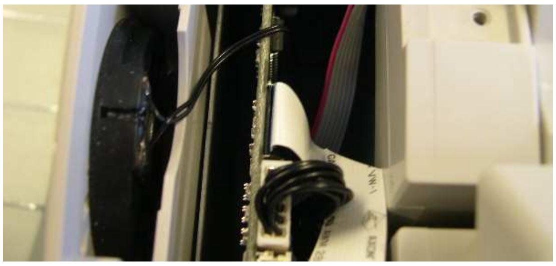
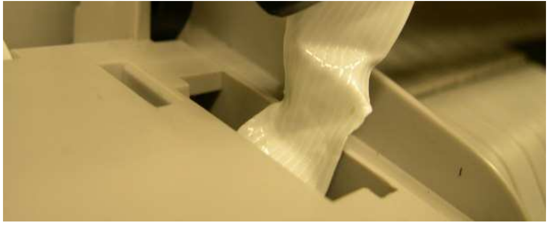
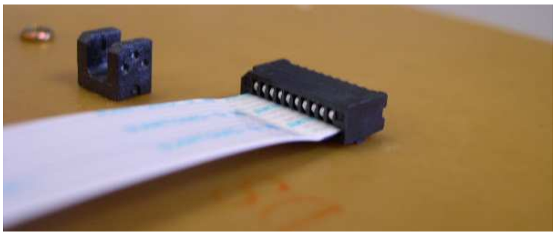
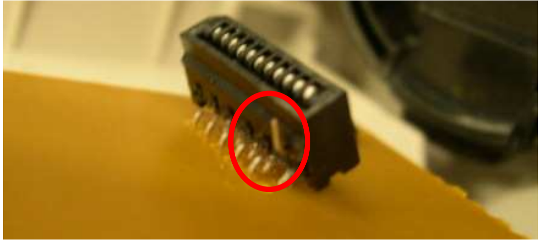
15.2.15 Skewed Scanner

Snapping of CIS-Holder not correct 	Snapping of CIS-Holder correct 

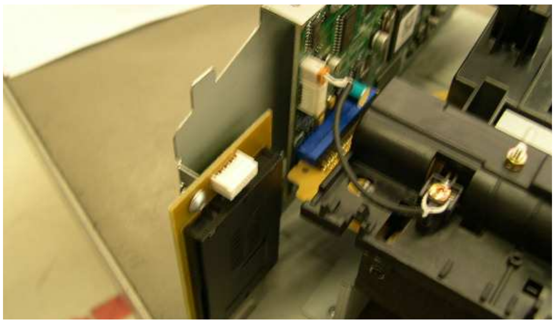
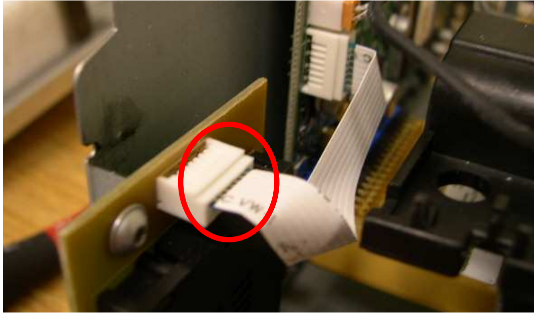
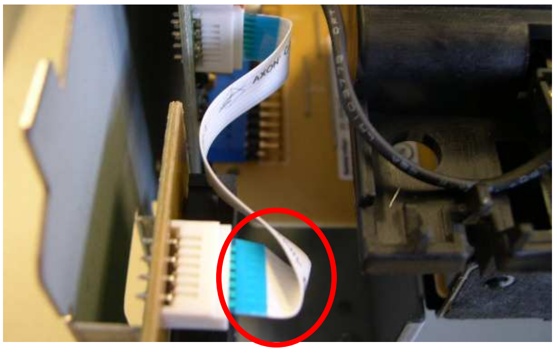
15.2.16 Sensor-Test failed

Paper-stock-sensor damaged or missing 	Lever Rear-cover bended or brocken 
Paper-in-sensor blocked 	

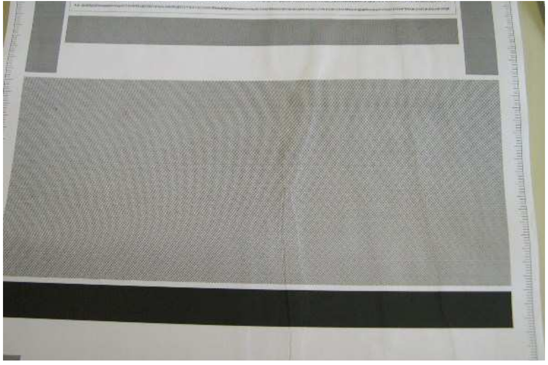
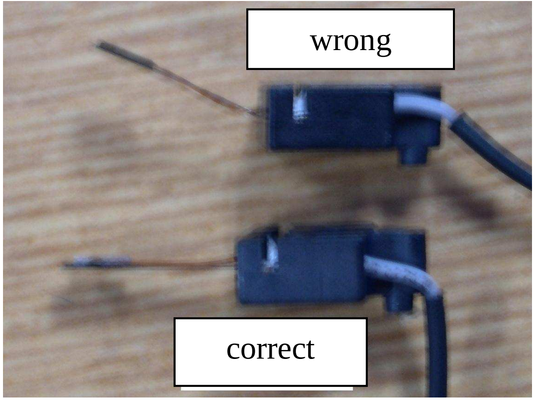
15.2.17 No display

OPU-cable connected on OPU 	OPU-cable connected on MAB 
OPU-cable damaged 	LCD-cable connected 
OPU connector damaged at sockets 	

15.2.18 Smartcard-Reader

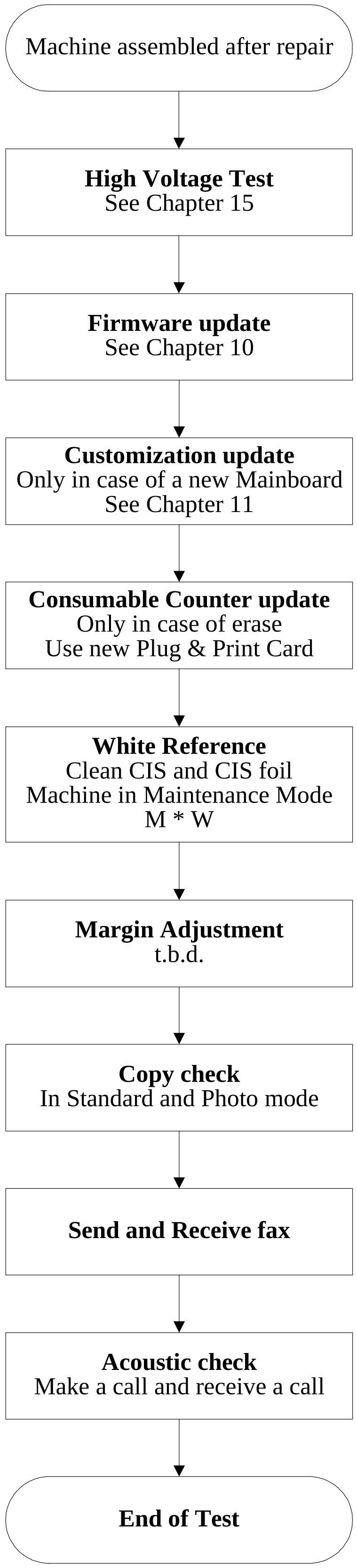
Smartcard-Reader not connected 	Smartcard-Reader wrong connected 
Smartcard-Reader correct connected 	

15.2.19 Wrinkles on printout

Wrinkles on printout 	Thermistor not touching roller 

16 TEST PROCEDURE (Minimal requirement after repair)

Follow the steps as described below:


Machine assembled after repair
High Voltage Test
See Chapter 15
Firmware update
See Chapter 10
Customization update
Only in case of a new Mainboard
See Chapter 11
Consumable Counter update
Only in case of erase
Use new Plug & Print Card
White Reference
Clean CIS and CIS foil
Machine in Maintenance Mode
M * W
Margin Adjustment
t.b.d.
Copy check
In Standard and Photo mode
Send and Receive fax
Acoustic check
Make a call and receive a call
End of Test